

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE <b>J</b>		PAGE OF PAGES <b>1   2</b>	
2. AMENDMENT/MODIFICATION NO. <b>0001</b>		3. EFFECTIVE DATE <b>01-May-2003</b>		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable) <b>0250570</b>	
6. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT P.O. BOX 3755 SEATTLE WA 98124-3755		CODE <b>DACA67</b>		7. ADMINISTERED BY (If other than item 6)  <b>See Item 6</b>			
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				<input checked="" type="checkbox"/> X		9A. AMENDMENT OF SOLICITATION NO. <b>DACA67-03-R-0210</b>	
				<input checked="" type="checkbox"/> X		9B. DATED (SEE ITEM 11) <b>21-Apr-2003</b>	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.  Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
<b>13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.</b> <b>IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.</b>							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Amendment No. R0001 Request for Proposal No. DACA67-03-R-0210 - Battle Simulation Center, Ft. Lewis, WA See Continuation Sheet							
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: _____ EMAIL: _____			
15B. CONTRACTOR/OFFEROR  _____ (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA  BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED  <b>01-May-2003</b>	

## SECTION SF 30 BLOCK 14 CONTINUATION PAGE

**The following items are applicable to this modification:**AMENDMENT NARRATIVE**A. This amendment revises the solicitation as follows:**

1. Price Schedule:
  - a. Item 0015 is revised
  - b. Note 4 is revised
2. Special Clauses, Section 00800:
  - a. SC-1.1 Option for Increased Quantity is revised
  - b. Index of Drawings is revised
3. The following Technical specifications Sections are **revised**:
  - a. Table of Contents
  - b. 01501 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS
  - c. 12600 AUDITORIUM CHAIRS AND TELESCOPING SEATING PLATFORM
4. The following Technical specifications Sections are **added**:
  - a. 13122 METAL BUILDING SYSTEM AND FOUNDATION
  - b. 16711 TELEPHONE/DATA SYSTEM, OUTSIDE PLANT
5. Drawings:
  - a. 3, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, and 304 are **revised**
  - b. 274A, 274B, 274C, 274D, 274E, 274F, 274G, 274H, and 274I are **added**

**B. The attached revised sections are to be replaced in their entirety. All changes are generally identified, for convenience, either by strikeout for deletions, and underlining of text for additions, or a single dark line in the margin. All portions of the revised or new page shall apply whether or not changes have been indicated.****C. The time and due date for submission of technical and price proposals is unchanged: 3:00 PM (PST), 22 May 2003.****D. Offerors must acknowledge receipt of this amendment by number and date on Standard Form 1442 BACK, in block 19, or by telegram.**

## Enclosures:

Schedule

Section 00800

Table of Contents - Technical Specifications

Section 01501

Section 12600

Section 13122

Section 16711

Revised drawings as noted in 00800 Index of Drawings

## SCHEDULE

BATTLE SIMULATION CENTER  
FORT LEWIS, WASHINGTON  
FY03 MCA PN 25057

### BASE ITEMS

<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
0001	All Work for Construction of Battle Simulation Center within a line 5 feet outside of the Building Exterior Walls, except for Optional Items 0007 through 0009	1	JOB	L.S.	\$ _____
0002	All Work for Construction of Battle Simulation Center Site Work and Utility Work from a line 5 feet outside of the Building Exterior Walls, except for Optional Items 0010 through 0015	1	JOB	L.S.	\$ _____
0003	All work for As-Built Drawings as Specified in Section 01702, from preparation to final approval, for Base Items and any Optional Items exercised <u>2/</u>	1	JOB	L.S.	\$30,000
0004	All work for O&M Manuals as Specified in Section 01701, from preparation to final approval, for Base Items and any Optional Items exercised <u>2/</u>	1	JOB	L.S.	\$75,000
0005	All work for Form 1354 Checklist and Equipment in Place List as specified in Sections 01704 and 01705, from preparation to final submittal, for Base Items and any Optional Items exercised <u>2/</u>	1	JOB	L.S.	\$15,000
0006	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>First Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Facility Maintenance Program	1	JOB	L.S.	\$ _____

**TOTAL BASE ITEMS (0001-0006)**

**\$ \_\_\_\_\_**

# **OPTIONAL ITEMS**

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
0007	All Work for Construction of OPERABLE PARTITIONS, listed as Doors D122A2, D122B2, D122C2, D122D2, D122E2, D122F2, D122G2 and D122H2, and Subsequent Passage Doors D122A4, D122B3, D122C4, D122D3, D122E4, D122F3, D122G4 and D122H3, identified as an option on the drawings, in lieu of extension of Wall Type 10F into intended openings and door assemblies designated to be D300	1	JOB	L.S.	\$_____
0008	All Work for Construction of the SUSPENDED CATWALK AND ASSOCIATED STAIRS, identified as an option on the drawings, in lieu of extension of adjacent wall types through door locations, as indicated on Plates A-106 and A-107	1	JOB	L.S.	\$_____
0009	All Work for Construction of the ROOF PAVER SYSTEM, identified as an option on the drawings, in lieu of 30" walking mat membrane that is shown dashed and noted on Roof Plan A-109	1	JOB	L.S.	\$_____
0010	All Work for Design and Construction of the Concrete Pad, Pad Mounted EMERGENCY GENERATOR, associated Underground Site Work, Connections and Equipment, as specified <u>4/</u>	1	JOB	L.S.	\$_____
0011	All Work for Construction of REINFORCED HARDENED DRIVABLE TURF (RHDT), identified as an option on the drawings	1	JOB	L.S.	\$_____
0012	All Work for Construction of the LANDSCAPING AND IRRIGATION, identified as an option on the drawings	1	JOB	L.S.	\$_____
0013	All Work for the Construction of COMMUNICATION DUCTS across the access loop road to the south of the building, identified as an option on the drawings	1	JOB	L.S.	\$_____
0014	All Work for Design and Construction of the Concrete Pad, PAD MOUNTED PROPANE TANK, and associated Underground Piping, Valves and Equipment to establish an alternate fuel source for the project, as specified <u>4/</u>	1	JOB	L.S.	\$_____
0015	All Work for Design and Construction of a PRE-FABRICATED STEEL STORAGE BUILDING, Concrete Pad and Footings, as specified <u>4/</u>	1	JOB	L.S.	\$_____

<b>OPTIONAL ITEMS</b> (Continued)					
<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
0016	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Second Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
0017	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Third Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
0018	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Fourth Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
0019	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Fifth Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
<b>TOTAL CONSTRUCTION (BASE &amp; OPTIONAL ITEMS)</b>					\$ _____
[Items: 0001 through 0005 and 0007 through 0015]					
<b>TOTAL OPERATION &amp; MAINTENANCE (BASE &amp; OPTIONAL ITEMS)</b>					\$ _____
[Items: 0006 and 0016 through 0019]					
<b>TOTAL BASE AND OPTIONAL ITEMS</b>					\$ _____
[Items: 0001 through 0019]					

See Notes on the following page.

NOTES:

1. The offeror shall not revise the dollar amounts established for Items 0003, 0004, and 0005.
2. No partial or total payment will be made for Items 0003, 0004, and 0005, until the as-built drawings, the O&M Manuals, and the 1354 Data/ Installed Equipment List are fully approved (A or B action).
3. Reference Section 01270 PAYMENT for additional descriptive information regarding Schedule Items.
4. Specific information for Items 0010, and 0014 and ~~0015~~ will be provided via amendment. |

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## SECTION 00800

### SPECIAL CLAUSES - CONSTRUCTION

#### SC-1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) (FAR 52.211-10).

The Contractor will be required to (a) commence work under this Contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) to prosecute the work diligently, and (c) to complete the entire work ready for use no later than 570 calendar days after date of receipt by Contractor of notice to proceed. The time stated for completion shall include final cleanup of the premises.

##### SC-1.1 OPTION FOR INCREASED QUANTITY

a. The Government may increase the quantity of work awarded by exercising one or more of the Optional Bid Items 0007 through 00159 at any time, or not at all, but no later than 90 calendar days after receipt by Contractor of notice to proceed. Notice to proceed on work Item(s) added by exercise of the option(s) will be given upon execution of consent of surety.

b. The parties hereto further agree that any option herein shall be considered to have been exercised at the time the Government deposits written notification to the Contractor in the mails.

c. The time allowed for completion of any optional items awarded under this contract will be the same as that for the base item(s), and will be measured from the date of receipt of the notice to proceed for the base item(s).

SC-1.2 Exception to Completion Period(s): In case the Contracting Officer determines that completion of seeding, sodding, and planting, and establishment of same is not feasible within the completion period(s) stated above, the Contractor shall accomplish such work in the first planting period following the contract completion period and shall complete such work as specified, unless other planting periods are directed or approved by the Contracting Officer.

#### SC-2. LIQUIDATED DAMAGES - CONSTRUCTION (SEP 2000) (FAR 52.211-12)

(a) If the Contractor fails to complete the work within the time specified in the Contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$1,742.00 for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

(d) Exception to Liquidated Damage: In case the Contracting Officer determines that completion of work stated above in paragraph Exception to Completion Period(s) is not feasible

during the completion period(s) stated in SC-1, such work will be exempted from liquidated damages.

SC-3 AND SC-4 DELETED.

SC-5. INSURANCE - WORK ON A GOVERNMENT INSTALLATION (JAN 1997) (FAR 52.228-5)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance period of this Contract at least the kinds and minimum amounts of insurance required in the Insurance Liability Schedule or elsewhere in the Contract.

(b) Before commencing work under this Contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective:

(1) for such period as the laws of the State in which this Contract is to be performed prescribe; or

(2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this Contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the Contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

(d) Insurance Liability Schedule (FAR 28.307-2)

(1) Workers' compensation and employer's liability. Contractors are required to comply with applicable Federal and State workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when Contract operations are so commingled with a Contractor's commercial operation that it would not be practical to require this coverage. Employer's liability coverage of at least \$100,000 shall be required, except in states with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.

(2) General Liability.

(a) The Contracting Officer shall require bodily injury liability insurance coverage written on the comprehensive form of policy of at least \$500,000 per occurrence.

(b) Property damage liability insurance shall be required only in special circumstances as determined by the agency.

(3) Automobile liability. The Contracting Officer shall require automobile liability insurance written on the comprehensive form of policy. The policy shall provide for bodily injury

and property damage liability covering the operation of all automobiles used in connection with performing the Contract. Policies covering automobiles operated in the United States shall provide coverage of at least \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage. The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.

(4) Aircraft public and passenger liability. When aircraft are used in connection with performing the Contract, the Contracting Officer shall require aircraft public and passenger liability insurance. Coverage shall be at least \$200,000 per person and \$500,000 per occurrence for bodily injury, other than passenger liability, and \$200,000 per occurrence for property damage. Coverage for passenger liability bodily injury shall be at least \$200,000 multiplied by the number of seats or passengers, whichever is greater.

(5) Environmental Liability. If this contract includes the transport, treatment, storage, or disposal of hazardous material waste the following coverage is required.

The Contractor shall ensure the transporter and disposal facility have liability insurance in effect for claims arising out of the death or bodily injury and property damage from hazardous material/waste transport, treatment, storage and disposal, including vehicle liability and legal defense costs in the amount of \$1,000,000.00 as evidenced by a certificate of insurance for General, Automobile, and Environmental Liability Coverage. Proof of this insurance shall be provided to the Contracting Officer.

SC-6 DELETED.

SC-7. PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984) (FAR 52.236-1): The Contractor shall perform on the site, and with its own organization, work equivalent to at least fifteen percent (15%) of the total amount of work to be performed under the Contract. The percentage may be reduced by a supplemental agreement to this Contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

SC-8. PHYSICAL DATA (APR 1984) (FAR 52.236-4): Data and information furnished or referred to below is for the Contractor's information. The Government will not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) Physical Conditions: The indications of physical conditions on the drawings and in the specifications are the result of site investigations by test holes shown on the drawings.

(b) Weather Conditions: Each bidder shall be satisfied before submitting his bid as to the hazards likely to arise from weather conditions. Complete weather records and reports may be obtained from any National Weather Service Office.

(c) Transportation Facilities: Each bidder, before submitting his bid, shall make an investigation of the conditions of existing public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the jobsite. The unavailability of transportation facilities or limitations thereon shall not become a basis for claims for damages or extension of time for completion of the work.

SC-9 DELETED.

SC-10. LAYOUT OF WORK (APR 1984) (FAR 52.236-17): The Contractor shall lay out its work from Government-established base lines and bench marks indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due, or to become due, to the Contractor.

SC-11. RESERVED

SC-12 AND SC-13 DELETED.

SC-14. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAY 1999)-  
(EFARS 52.231-5000)

(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region VIII. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

(e) Copies of EP1110-1-8 "Construction Equipment Ownership and Operating Expense Schedule" Volumes 1 through 12 are available in Portable Document Format (PDF) and can be viewed or downloaded at <http://www.usace.army.mil/inet/usace-docs/eng-pamphlets/cecw.htm>. A CD-ROM containing (Volumes 1-12) is available through either the Superintendent of Documents or Government bookstores. For additional information telephone 202-512-2250, or access on the Internet at [http://www.access.gpo.gov/su\\_docs](http://www.access.gpo.gov/su_docs).

SC-15. PAYMENT FOR MATERIALS DELIVERED OFF-SITE (MAY 1999)-(EFARS 52.232-5000)

(a) Pursuant to FAR clause 52.232-5, Payments Under Fixed Priced Construction Contracts, materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to: (1) materials required by the technical provisions; or (2) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

(b) Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item. In addition to petroleum products, payment for materials delivered off-site is limited to the following items: Any other construction material stored offsite may be considered in determining the amount of a progress payment.

SC-16 AND SC-17 DELETED

SC-18. CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)(DOD FAR SUPP 252.236-7001)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

- (1) Check all drawings furnished immediately upon receipt;
- (2) Compare all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies;
- (4) Be responsible for any errors which might have been avoided by complying with this paragraph (b); and
- (5) Reproduce and print contract drawings and specifications as needed.

(c) In general—

- (1) Large scale drawings shall govern small scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified in the index of drawings attached at the end of the Special Clauses.

SC-19 THROUGH SC-21 DELETED.

SC-22. EPA ENERGY STAR: The Government requires that certain equipment be Energy Star compliant. Initially, the sole Energy Star requirement shall be the self certification by the bidder that the specified equipment is Energy Star compliant. Within 3 months of the availability of an EPA sanctioned test for Energy Star compliance, the Contractor shall submit all equipment upgrades and additions for testing and provide proof of compliance to the Government upon completion of testing. Testing shall be at the Contractor's expense.

SC-23. RECOVERED MATERIALS: The Corps of Engineers encourages all bidders to utilize recovered materials to the maximum extent practicable. The attached APPENDIX R contains procurement guidelines for products containing recovered materials.

## APPENDIX R

### PART 247 - COMPREHENSIVE PROCUREMENT GUIDELINE FOR PRODUCTS CONTAINING RECOVERED MATERIALS

40 CFR Ch. 1 (9-1-99 Edition)

#### Subpart B-Item Designations

#### § 247.10 Paper and paper products.

Paper and paper products, excluding building and construction paper grades.

#### § 247.11 Vehicular products.

- (a) Lubricating oils containing re-refined oil, including engine lubricating oils, hydraulic fluids, and gear oils, excluding marine and aviation oils.
- (b) Tires, excluding airplane tire
- (e) Reclaimed engine coolants, excluding coolants used in non-vehicular applications.

#### 247.12 Construction products.

- (a) Building insulation product including the following items:
  - (1) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock vermiculite, and perlite;
  - (2) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool).
  - (3) Board (sheathing, roof decking wall panel) insulation, including but not limited to structural fiberboard and laminated paperboard products perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and
  - (4) Spray-in-place insulation, including but not limited to foam-in-place polyurethane and polyisocyanurate and spray-on cellulose.
- (b) Structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing shingle backer, sound deadening board, roof insulating board, insulating wallboard, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels, floor underlayments, and roof overlay (cover board).
- (c) Cement and concrete, including concrete products such as pipe and block, containing coal fly as ground granulated blast furnace (GGBF) slag.
- (d) Carpet made of polyester fiber use in low- and medium-wear applications.
- (e) Floor tiles and patio block containing recovered rubber or plastic.
- (f) Shower and restroom dividers/partitions containing recovered plastic or steel.
- (g) (1) Consolidated latex paint used for covering graffiti; and
- (2) Reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood and metal surfaces.

§247.13 Transportation products.

- (a) Traffic barricades and traffic cones used in controlling or restricting vehicular traffic.
- (b) Parking stops made from concrete or containing recovered plastic or rubber.
- (c) Channelizers containing recovered plastic or rubber.
- (d) Delineators containing recovered plastic, rubber, or steel.
- (e) Flexible delineators containing recovered plastic.

§ 247.14 Park and recreation products

- (a) Playground surfaces and running tracks containing recovered rubber or plastic.
- (b) Plastic fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

247.15 Landscaping products.

- (a) Hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and as an over-spray for straw mulch in landscaping, erosion control, and soil reclamation.
- (b) Compost made from yard trimmings, leaves, and/or grass clippings for use in landscaping, seeding of grass or other plants on roadsides and embankments, as a nutritious mulch under trees and shrubs, and in erosion control and soil reclamation.
- (c) Garden and soaker hoses containing recovered plastic or rubber.
- (d) Lawn and garden edging containing recovered plastic or rubber.

§ 247.16 Non-paper office product.

- (a) Office recycling containers and office waste receptacles.
- (b) Plastic desktop accessories.
- (c) Toner cartridges.
- (d) Binders.
- (e) Plastic trash bags.
- (f) Printer ribbons.
- (g) Plastic envelopes.

§ 247.17 Miscellaneous products.

Pallets containing recovered wood, plastic, or paperboard.

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FORT LEWIS, WASHINGTON  
Project Number: 25057  
22s/191-90-12

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02231	CLEARING AND GRUBBING
02300	EARTHWORK
02315	EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS
02316	EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS
02370	SOIL SURFACE EROSION CONTROL
02373	GEOTEXTILE
02510	WATER DISTRIBUTION SYSTEM
02531	SANITARY SEWERS
02630	STORM-DRAINAGE SYSTEM
02722	AGGREGATE AND/OR GRADED-CRUSHED AGGREGATE BASE COURSE
02741	HOT-MIX ASPHALT (HMA) FOR ROADS
02754	CONCRETE PAVEMENTS FOR SMALL PROJECTS
02760	FIELD MOLDED SEALANTS FOR SEALING JOINTS IN RIGID PAVEMENTS
02762	COMPRESSION JOINT SEALS FOR CONCRETE PAVEMENTS
02763	PAVEMENT AND TRAFFIC CONTROL MARKINGS AND DEVICES
02770	CONCRETE SIDEWALKS AND CURBS AND GUTTERS
02811	UNDERGROUND SPRINKLER SYSTEMS
02821	FENCING

- 02921 SEEDING
- 02922 SODDING
- 02924 REINFORCED HARDENED DRIVEABLE TURF
- 02930 EXTERIOR PLANTING
- 02935 EXTERIOR PLANT MATERIAL MAINTENANCE

#### DIVISION 03 - CONCRETE

- 03100 FORMWORK FOR CONCRETE
- 03150 EXPANSION JOINTS, CONTRACTION JOINTS, AND WATERSTOPS
- 03200 CONCRETE REINFORCEMENT
- 03300 CAST-IN-PLACE STRUCTURAL CONCRETE
- 03413 PRECAST ARCHITECTURAL CONCRETE

#### DIVISION 04 - MASONRY

- 04200 MASONRY
- 04810 NONBEARING MASONRY VENEER/STEEL STUD WALLS

#### DIVISION 05 - METALS

- 05090 WELDING, STRUCTURAL
- 05120 STRUCTURAL STEEL
- 05210 STEEL JOISTS
- 05300 STEEL DECKING
- 05400 COLD-FORMED STEEL FRAMING
- 05500 MISCELLANEOUS METAL
- 05502 METALS: ADJUSTABLE CEILING GRID

#### DIVISION 06 - WOODS & PLASTICS

- 06100 ROUGH CARPENTRY
- 06200 FINISH CARPENTRY
- 06410 LAMINATE AND VENEER CLAD ARCHITECTURAL CASEWORK
- 06650 SOLID POLYMER (SOLID SURFACING) FABRICATIONS

#### DIVISION 07 - THERMAL & MOISTURE PROTECTION

- 07110 BITUMINOUS DAMPPROOFING
- 07190 WATER REPELLENTS
- 07212 MINERAL FIBER BLANKET INSULATION
- 07214 BOARD AND BLOCK INSULATION
- 07220 ROOF INSULATION
- 07412 NON-STRUCTURAL METAL ROOFING
- 07413 METAL SIDING
- 07530 ELASTOMERIC ROOFING (EPDM)
- 07600 SHEET METALWORK, GENERAL

07840 FIRESTOPPING  
07900 JOINT SEALING

DIVISION 08 - DOORS & WINDOWS

08110 STEEL DOORS AND FRAMES  
08120 ALUMINUM DOORS AND FRAMES  
08210 WOOD DOORS  
08331 METAL ROLLING COUNTER DOORS  
08520 ALUMINUM AND ENVIRONMENTAL CONTROL ALUMINUM WINDOWS  
08600 SKYLIGHTS  
08710 DOOR HARDWARE  
08810 GLASS AND GLAZING

DIVISION 09 - FINISHES

09250 GYPSUM BOARD  
09310 CERAMIC TILE, QUARRY TILE, AND PAVER TILE  
09510 ACOUSTICAL CEILINGS  
09650 RESILIENT FLOORING  
09685 CARPET TILE  
09840 ACOUSTICAL WALL AND CEILING TREATMENT  
09900 PAINTS AND COATINGS  
09915 COLOR SCHEDULE

DIVISION 10 - SPECIALTIES

10100 VISUAL COMMUNICATIONS SPECIALTIES  
10153 TOILET PARTITIONS  
10201 METAL WALL LOUVERS  
10260 WALL AND CORNER GUARDS  
10270 RAISED FLOOR SYSTEM  
10430 EXTERIOR SIGNAGE  
10440 INTERIOR SIGNAGE  
10522 FIRE EXTINGUISHER CABINETS  
10605 WIRE MESH PARTITIONS  
10650 OPERABLE PARTITIONS  
10800 TOILET ACCESSORIES

DIVISION 11 - EQUIPMENT

11020 SECURITY VAULT DOOR

DIVISION 12 - FURNISHINGS

- 12490 WINDOW TREATMENT
- 12600 AUDITORIUM CHAIRS AND TELESCOPING SEATING PLATFORM
- 12705 FURNITURE SYSTEMS

DIVISION 13 - SPECIAL CONSTRUCTION

- 13080 SEISMIC PROTECTION FOR MISCELLANEOUS EQUIPMENT
- 13100 LIGHTNING PROTECTION SYSTEM
- 13121 PREFABRICATED GUARDHOUSE
- 13122 METAL BUILDING SYSTEM AND FOUNDATION
- 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE
- 13930 WET PIPE SPRINKLER SYSTEM, FIRE PROTECTION
- 13945 PREACTION SPRINKLER SYSTEMS, FIRE PROTECTION

DIVISION 14 – (Not Applicable)

DIVISION 15 – MECHANICAL

- 15050 BASIC MECHANICAL MATERIALS AND METHODS
- 15070 SEISMIC PROTECTION FOR MECHANICAL EQUIPMENT
- 15080 THERMAL INSULATION FOR MECHANICAL SYSTEMS
- 15181 CHILLED AND CONDENSER WATER PIPING AND ACCESSORIES
- 15185 LOW TEMPERATURE WATER HEATING SYSTEM
- 15190 GAS PIPING SYSTEMS
- 15400 PLUMBING, GENERAL PURPOSE
- 15515 LOW PRESSURE WATER HEATING BOILERS (OVER 800,000 BTU/HR OUTPUT)
- 15620 LIQUID CHILLERS
- 15700 UNITARY HEATING AND COOLING EQUIPMENT
- 15895 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM
- 15910 DIRECT DIGITAL CONTROL SYSTEMS
- 15990 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS
- 15995 COMMISSIONING OF HVAC SYSTEMS

DIVISION 16 - ELECTRICAL

- 16050 BASIC ELECTRICAL MATERIALS AND METHODS
- 16060 GROUNDING SYSTEM
- 16370 ELECTRICAL DISTRIBUTION SYSTEM, AERIAL
- 16375 ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND
- 16415 ELECTRICAL WORK, INTERIOR
- 16528 EXTERIOR LIGHTING
- 16710 PREMISES DISTRIBUTION SYSTEM
- 16711 TELEPHONE/DATA SYSTEM, OUTSIDE PLANT

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## SECTION 01501

### CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

#### PART 1 GENERAL

##### 1.1 AVAILABILITY OF UTILITY SERVICES

###### 1.1.1 Water

The Government will make available to Contractor, from existing outlets and supplies, reasonable amounts of potable water without charge. Contractor shall reasonably conserve potable water furnished. Contractor, at its own expense, shall install and maintain necessary temporary connections and distribution lines and shall remove the connections and lines prior to final acceptance of construction.

###### 1.1.2 Electricity

Electric power will be made available by the Government, without charge, to the Contractor for performing work at the work area. The Contractor shall carefully conserve electricity furnished. The Contractor, at its own expense and in a workmanlike manner satisfactory to the Contracting Officer, shall extend the existing electrical distribution system (overhead and underground) for temporary electrical service to the worksite, shall install and maintain necessary temporary connections, and shall remove the same prior to final acceptance of the construction.

##### 1.2 SANITARY PROVISIONS

Contractor shall provide sanitary accommodations for the use of employees as may be necessary and shall maintain accommodations approved by the Contracting Officer and shall comply with the requirements and regulations of the State Health Department, County Sanitarian, or other authorities having jurisdiction.

##### 1.3 TEMPORARY ELECTRIC WIRING

###### 1.3.1 Temporary Power and Lighting

The Contractor shall provide construction power facilities in accordance with the safety requirements of the National Electric Code NFPA No. 70 and the SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. The Contractor, or its delegated subcontractor, shall enforce the safety requirements of electrical extensions for the work of subcontractors. Work shall be accomplished by journeyman electricians.

###### 1.3.2 Construction Equipment

In addition to the requirements of SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1, temporary wiring conductors installed for operation of construction tools and equipment shall be either Type TW or THW contained in metal raceways, or shall be hard usage or extra hard usage multiconductor cord. Temporary wiring shall be secured above the ground or floor in a workmanlike manner and shall not present an obstacle to persons or equipment.

Open wiring may only be used outside of buildings, and then only in accordance with the provisions of the National Electric Code.

### 1.3.3 Submittals

Submit detailed drawings of temporary power connections. Drawings shall include, but not be limited to, main disconnect, grounding, service drops, service entrance conductors, feeders, GFCI'S, and all site trailer connections.

## 1.4 FIRE PROTECTION

During the construction period, the Contractor shall provide fire extinguishers in accordance with the safety requirements of the SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1. The Contractor shall remove the fire extinguishers at the completion of construction.

## 1.5 STAGING AREA

Contractor will be provided adequate open staging area as directed by the Contracting Officer. Area is unsecured, and Contractor shall make provisions for its own security.

Contractor shall be responsible for keeping staging area, and office area clean and free of weeds and uncontrolled vegetation growth. Weeds shall be removed by pulling or cutting to within 1-inch of ground level. Lawn areas shall be mown to keep growth to less than 2-inches. All loose debris and material subject to being moved by prevailing winds in the area shall be picked up or secured at all times.

If the area is not maintained in a safe and clean condition as defined above the Contracting Officer may have the area cleaned by others with the costs being deducted from the Contractor's payment.

## 1.6 HOUSEKEEPING AND CLEANUP

Pursuant to the requirements of Clause CLEANING UP and Clause ACCIDENT PREVENTION, of the CONTRACT CLAUSES, the Contractor shall assign sufficient personnel to ensure compliance. The Contractor shall submit a detailed written plan for implementation of this requirement. The plan will be presented as part of the preconstruction safety plan and will provide for keeping the total construction site, structures, and accessways free of debris and obstructions at all times. Work will not be allowed in those areas that, in the opinion of the Contracting Officer, have unsatisfactory cleanup and housekeeping at the end of the preceding day's normal work shift. At least once each day all areas shall be checked by the Quality Control person of the Contractor and the findings recorded on the Quality Control Daily Report. In addition, the Quality Control person shall take immediate action to ensure compliance with this requirement. Housekeeping and cleanup shall be assigned by the Contractor to specific personnel. The name(s) of the personnel shall be available at the project site.

## 1.7 DIGGING PERMIT

Before performing any onsite excavation, Contractor shall obtain a digging permit. The digging permit can be obtained at Directorate of Public Works, Building 2012, room 110, telephone 253-

967-5237, on weekdays between 8 a.m. and 3:30 p.m. Typically it will take a Contractor 3-5 working days to collect all signatures necessary for clearances prior to the permit being issued.

## 1.8 CONSTRUCTION NEAR COMMUNICATIONS CABLES

### 1.8.1 Excavation Near Communication Cables

Digging within .9144 meters (3 feet) of communication cables (including fiber optic cables) shall be performed by hand digging until the cable is exposed. The Contracting Officer shall be notified a minimum 3 days prior to digging within a .9144 meter (3-foot) area near cable. The cable route will be marked by the Government prior to excavation in the area. A digging permit shall be obtained by the Contractor before performing any excavation. The Contractor shall be held responsible for any damage to the cable by excavation procedures. Once the cable is exposed, mechanical excavation may be used if there is no chance of damage occurring to the cable.

### 1.8.2 Reburial of Exposed Utilities

When existing utility lines are reburied a tape, detectable by pipe detector systems, shall be installed above the uncovered length of the utility at a depth of 305 mm (12 inches) below grade. Tape shall be a minimum .127 mm (5 mil) plastic tape with metallic tracer, minimum 76 mm (3 inches) wide, lettering on tape to show buried utility, and brightly colored.

### 1.8.3 Access to Communications Manhole or Handhole

No communications manhole or handhole shall be entered without first obtaining a fiber optic cable briefing. Coordinate through the Contracting Officer with USAISC, Fort Lewis, Outside Plant Branch, Cable Section, Bldg. 2682.

### 1.8.4 Cable Cuts or Damage

If a communications cable is cut or damaged the Contractor shall immediately notify the Contracting Officer (CO) and begin gathering personnel and equipment necessary to repair the cut, or damage. Contractor shall begin repairs within one hour of the cut or damage, unless notified otherwise, and continue repairs without interruption until full service is restored.

## 1.9 PROJECT SIGN

Contractor shall furnish and install two project signs in accordance with conditions hereinafter specified and layout shown on drawing No. 49s-40-05-15, Sheets 1 and 2, except Corps of Engineers' castle and Department of Army seal will be Government furnished. All letters shall be block type, upper case. Letters shall be painted as indicated using exterior-type paint. Sign shall be maintained in excellent condition throughout the life of job. Project sign shall be located as directed. Upon completion of project, sign shall be removed and shall remain the property of Contractor.

## 1.10 CONCEALED WORK

All items of work to be concealed shall be Government inspected prior to concealment.

## 1.11 REPAIR OF ROAD CUTS

Asphaltic surface shall be completely in place within 48 hours after placement of base gravel. Between placement of base gravel and pavement, road shall be kept in driveable and passable condition.

## 1.12 ELEVATED WORK AREAS

Workers in elevated work areas in excess of 2 meters (6 feet) above an adjoining surface require special safety attention. In addition to the provisions of SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1, the following safety measures are required to be submitted to the Contracting Officer's Representative. Prior to commencement of work in elevated work areas, the Contractor shall submit drawings depicting all provisions of his positive fall protection system including, but not limited to, all details of guardrails. Positive protection for workmen engaged in the installation of structural steel and steel joist shall be provided by safety nets, tie-offs, hydraulic man lifts, scaffolds, or other required means. Decking crews must be tied-off or work over nets or platforms not over 2 meters (6 feet) below the work area. Walking on beams and/or girders and the climbing of columns is prohibited without positive protection. Perimeter guardrails shall be installed at floor, roof, or wall openings more than 2 meters (6 feet) above an adjoining surface and on roof perimeters. Rails shall be designed to protect all phases of elevated work including, but not limited to, roofing operations and installation of gutters and flashing. Rails around roofs may not be removed until all work on the roof is complete and all traffic on or across the roof ceases. Rails shall be designed by a licensed engineer to provide adequate stability under any anticipated impact loading. As a minimum, the rails shall consist of a top rail at a height of 1067 mm (42 inches), a mid-rail, and a toe board. Use of tie-offs, hydraulic man lifts, scaffolds, or other means of roof edge protection methods may be utilized on small structures such as family housing, prefabricated metal buildings, etc. If safety belts and harnesses are used, the positive fall protection plan will address fall restraint versus fall arrest. Body belts will ONLY be used for fall restraint, they will not be used for fall arrest.

## 1.13 TRAFFIC CONTROL PLAN

The Contractor shall submit a Traffic Control Plan for moving traffic through and around the construction zone in a manner that is conducive to the safety of motorists, pedestrians, and workers. This plan shall indicate scheduling, placement, and maintenance of traffic control devices in accordance with the U.S. Department of Transportation, Federal Highway Administration publication, Manual on Uniform Traffic Control Devices. The Contractor shall obtain, in writing, from the Directorate of Public Works (PW) Traffic Engineer, through the Contracting Officer, approval of the Traffic Control Plan. The Contractor shall submit his Traffic Control Plan at least 15 working days prior to commencement of street or road work. Streets (except dead end) may be closed to traffic temporarily (except at least one access lane shall be kept open to traffic) by approved written request to the Contracting Officer at least 10 working days prior to street closure. Excavations shall not remain open for more than 1 working day without approval. The Contractor shall identify by site inspection and indicate on the plan all roads and trails used by military or civilian wheeled and tracked vehicular traffic and, by traffic control devices, prevent this traffic from entering the construction zone.

#### 1.14 UTILITIES NOT SHOWN

The Contractor can expect to encounter, within the construction limits of the entire project, utilities not shown on the drawings and not visible as to the date of this contract. The Contractor shall scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground where existing utilities are discovered. The Contractor shall verify the elevations of existing utilities, piping and any type of underground obstruction not indicated, or indicated and not specified to be removed. If such utilities interfere with construction operations, he shall immediately notify the Contracting Officer verbally and then in writing to enable a determination by the Contracting Officer as to the necessity for removal or relocation. If such utilities are removed or relocated as directed, the Contractor shall be entitled to equitable adjustment for any additional work or delay. The types of utilities the Contractor may encounter are waterlines, sewer lines (storm and sanitary), gas lines, fueling lines, steam lines, buried fuel tanks, septic tanks, other buried tanks, communication lines, cathodic protection cabling, and power lines. These utilities may be active or abandoned utilities.

#### 1.15 GOVERNMENT WITNESSING AND SCHEDULING OF TESTING

The Contractor shall notify the Contracting Officer, by serial letter, of dates and agenda of all performance testing of the following systems: mechanical (including fire protection and EMCS), electrical (including fire protection) medical and food service systems a minimum of 10 calendar days prior to start of such testing. In this notification, the Contractor shall certify that all equipment, materials, and personnel necessary to conduct such testing will be available on the scheduled date and that the systems have been prechecked by him and are ready for performance and/or acceptance testing. Contractor shall also confirm that all operations and maintenance manuals have been submitted and approved. **NO PERFORMANCE AND/OR ACCEPTANCE TESTING WILL BE PERMITTED UNTIL THE OPERATIONS AND MAINTENANCE MANUALS HAVE BEEN APPROVED.**

Government personnel, at the option of the Government, will travel to the site to witness testing. If the testing must be postponed or canceled for whatever reason not the fault of the government, the Contractor shall provide the Government not less than 3 working days advance notice (notice may be faxed) of this postponement or cancellation. Should this 3 working day notice not be given, the Contractor shall reimburse the Government for any and all out of pocket expenses incurred for making arrangements to witness such testing including, but not limited to airline, rental car, meal, and lodging expenses. Should testing be conducted, but fail and have to be rescheduled for any reason not the fault of the Government, the Contractor shall similarly reimburse the Government for all expenses incurred.

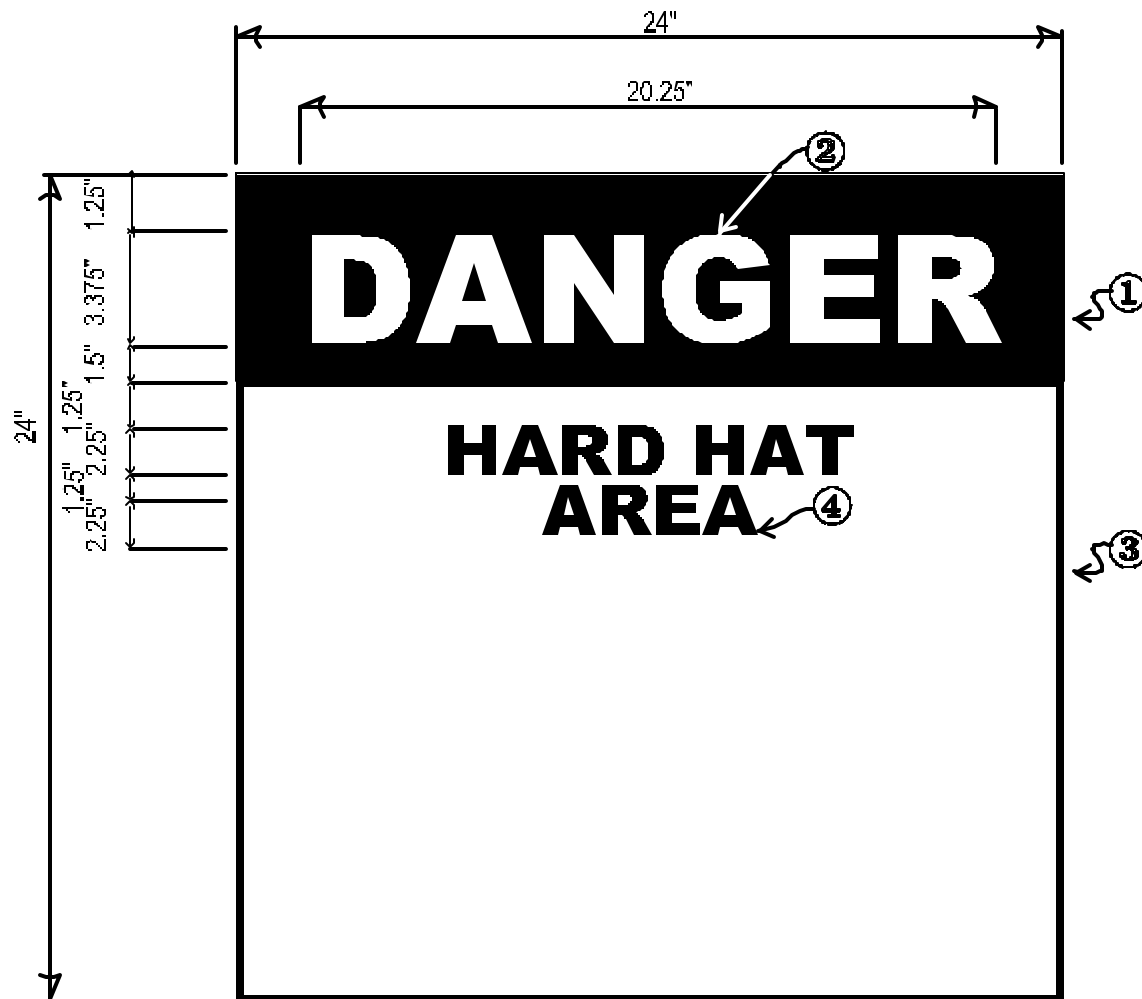
#### 1.16 OFFICE SPACE

The Contractor shall furnish office space of 14' x 70' (2 offices, 1 conference room) with power, water, appropriate office furniture, toilet facilities, heat and air-conditioning, parking lot and sidewalks. Janitorial service shall also be provided. Telephone service shall be provided for the duration of time that the Contractor provides telephone service for himself. The Government will pay only charges for long distance calls made by Government personnel. Contractor shall be responsible for installing all utility hookups, tie downs, skirting, slabs, foundations, steps and landings to meet all local, county, state and federal codes and regulations. The office enclosure and furnishings will remain property of the Contractor and shall be removed from the site upon completion of the project.

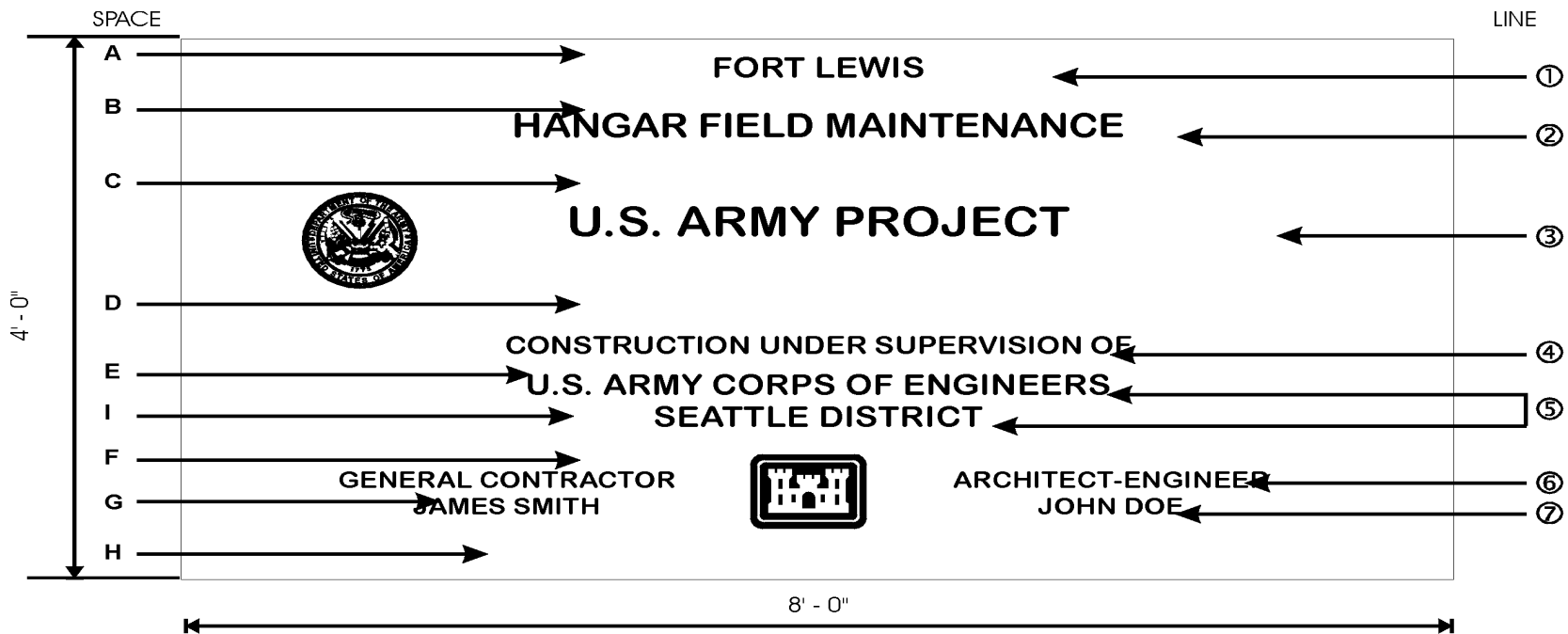
## 1.1~~6~~7 HARD HAT SIGNS

The Contractor shall provide 610 mm by 610 mm (24 by 24 inch) square Hard Hat Area signs at each entry to the project or work area as directed by the Contracting Officer. A minimum of two signs will be required. Signs shall be in accordance with the sketch at the end of this section.

PART 2 PRODUCTS AND PART 3 EXECUTION (NOT APPLICABLE)



- SIGN SHALL BE FABRICATED FROM .125 THICK 6061-T6 ALUMINUM PANEL
- COLOR
  1. SAFETY RED (SR)
  2. WHITE
  3. WHITE
  4. BLACK
- LETTERING SHALL BE HELVETICA BOLD TYPOGRAPHY.
- LETTERS AND BACKGROUND SHALL BE REFLECTIVE SHEETING MATERIAL.
- SIGNS SHALL BE POSTED AT 6'-6" (BOTTOM SIGN TO GRADE) OR AS DIRECTED BY THE CONTRACTING OFFICER.
- LETTERING TO BE CENTERED ON PANEL.



### SAMPLE CONSTRUCTION SIGN FOR MCP PROJECTS SCHEDULE

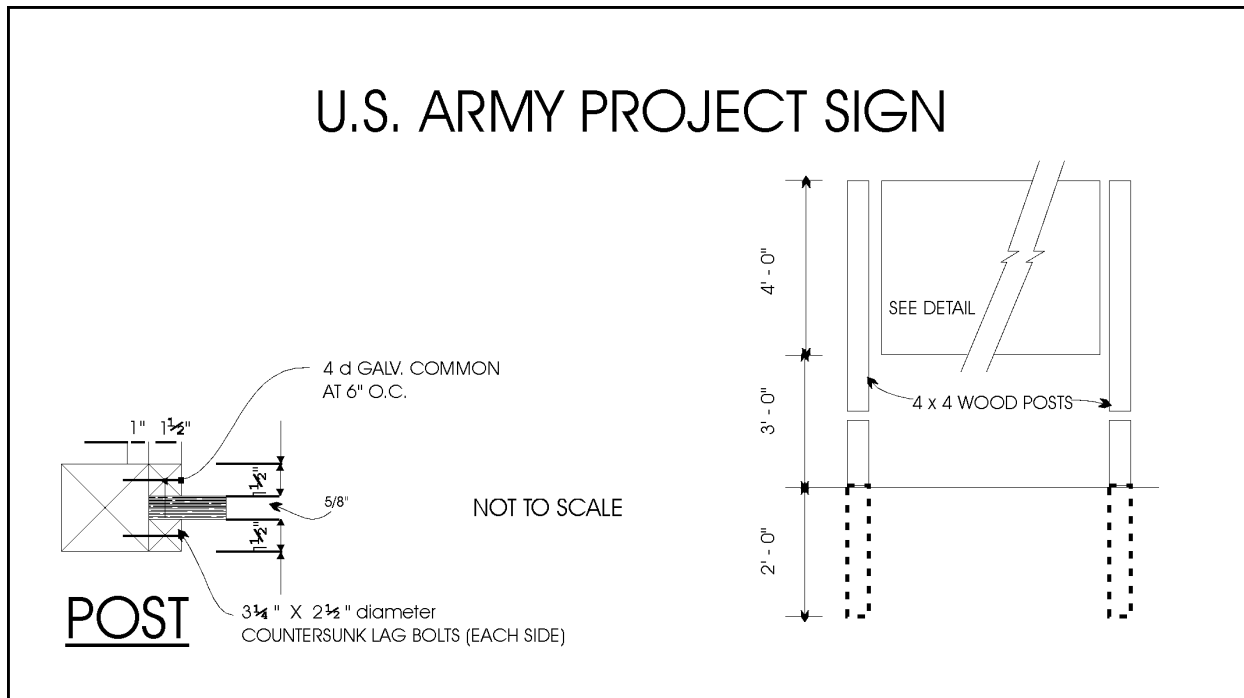
SPACE	HT.	LINE	DESCRIPTION	LETTER HT.	STROKE
A	2"	1	LOCATION	2 3/8"	1/4"
B	2 5/8"	2	PROJECT NOMENCLATURE *	2 3/4"	3/8"
C	5 3/4"	3	U.S. ARMY PROJECT	4"	1/2"
D	8"	4	CONSTRUCTION UNDER SUP.	1 1/2"	1/8"
E	4"	5	CONSTRUCTION AGENCY *	2 3/8"	1/4"
F	4"	6	GENERAL CONTRACTOR *	1 3/8"	3/16"
G	1"	7	GENERAL CONTRACTOR*	1 3/8"	3/16"
H	2 7/8"	*	WILL VARY TO SUIT PROJECT REQUIREMENTS		
I	2		SEATTLE DISTRICT		

**U.S. ARMY**

**PROJECT  
CONSTRUCTION SIGN**

Sheet 1 of 2 Scales As shown  
U.S. Army Engr. Dist. Seattle, WA.

Dr:	R.L.W.	Transmitted with report
Tr:	R.L.W.	DATED: 20 JUNE 84
Ck:	R.L.W.	File No. 49s/40-05-15



## NOTES:

1. Signboard 4' x 8' x 5/8" grade A-C exterior type plywood with medium density overlay on both sides.
2. Paint both sides and edges with one prime coat and two coats of paint, color white exterior type enamel. Lettering shall be as shown on drawing and shall be black gloss exterior type enamel.
3. Lettering shall be Helvetica medium.
4. Acceptable abbreviations may be used for Contractor's name.
5. Department of Air Force Seal and Corps of Engineers' Castle to be Government furnished.
6. No company logo shall be used.
7. Sign posts and 1 1/2" wood trim shall be painted white.
8. Upon completion of work under this contract, the project sign shall be removed from the job site and shall remain the property of the Contractor.

NOTE: The Contractor shall verify the colors to be used with the Contracting Officer prior to constructing the sign.

SHEET 2 OF 2

END OF SECTION

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## SECTION 12600

### AUDITORIUM CHAIRS AND TELESCOPING SEATING PLATFORM

#### PART 1 GENERAL

##### 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

##### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3597 (1995a) Woven Upholstery Fabrics-Plain,  
Tufted, or Flocked

##### 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

##### SD-02 Shop Drawings

###### Installation; G RO

Drawings indicating metal thickness, fastenings, details of hinge mechanism, seat and back dimensions, proposed finish, and including seating plans showing row spacing, row lengths, the varying lateral spacing at backs and seats, back pitch, and chair widths for the various section lengths, floor pitch, and riser height, where applicable. Drawing indicating configuration dimensions and details of all equipment and details of telescoping seating platform including all necessary electrical connections.

##### SD-03 Product Data

###### Auditorium Chairs; G RO

Manufacturer's descriptive data, catalog cuts, and installation instructions.

##### SD-04 Samples

###### Auditorium Chairs; G RO

Samples of upholstery, plywood, laminate, paint, and plastic finish materials and one complete chair. Fabric samples shall be of sufficient size to show color range, pattern, and finish. Chair sample may be incorporated into the installation, provided it is identified and the location noted.

### 1.3 DELIVERY AND STORAGE

Auditorium chairs shall be delivered to the site in unopened containers clearly labeled with the manufacturer's name and container contents. Materials shall be stored in a safe, dry, and clean location. Handling of items shall be in a manner that will protect the materials from damage.

### 1.4 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

## PART 2 PRODUCTS

### 2.1 MATERIALS

Recyclable materials (chair padding, plastics, etc.) shall conform to EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

#### 2.1.1 Woven Fabric Upholstery

Woven fabric shall conform to ASTM D 3597, except that it shall be 54% Polyolefin, 46% Nylon. Fabric shall be treated to resist staining and soiling. Color and pattern shall be selected from manufacturer's standard materials and in accordance with Section 09915 COLOR SCHEDULE.

#### 2.1.2 Padding Material

Polyurethane foam shall be high density, fire retardant, non-hardening and non-oxidizing and shall have a high resistance to alkalies, oils, grease, soaps, abrasions, moisture, mildew, and tearing.

#### 2.1.3 Molded Plastic

Molded plastic shall be high density, high impact resistant blow-molded linear polyethylene with ultra-violet light inhibitors to retard fading, with a minimum tensile strength of 3300 psi (23 MPa). Material shall be capable of withstanding outdoor temperatures ranging from plus 175 degrees to minus 50 degrees F (80 degrees to minus 45 degrees C). Plastic shall have a burn rate of 1" per minute when tested in accordance with ASTM D635 or the Department of Transportation Motor Vehicle Safety Standard No. 302. Pigments used shall be of such quality to eliminate painting plastic parts. Component surfaces shall have a textured finish.

### 2.2 CHAIRS

Chair components and assembly shall be free from objectionable projections or irregularities. Corners and edges shall be smooth and rounded. Bolts, nuts, and other fastenings shall be capped. Steel shall be well-formed to shape and size required. Jointing of members shall be welded, riveted, or interlocked. Exposed welds shall be ground and dressed smooth. Casting shall be fine textured, sound, and free of pits, blow holes, and fins. Lines shall be true, accurate, and true-to-pattern with excess metal or imperfections removed. Fastening shall be concealed where possible.

#### 2.2.1 General Chair Assembly

Assembly shall consist of molded plastic covered steel with an upholstered steel front panel, Irwin "Quest" series or equal. Back assembly length shall be between 20 and 27-1/2 inches (500 and 700 mm) above the rear tread measured parallel to the back. Rear panel shall completely conceal and protect the rest of the seat assembly when in the raised position. Back shall be nose beam mounted and back for storage. Auditorium chairs shall be provided which are capable of being fully functional in the upright and locked position, while capable of being folded flat on the platform deck for storage within a height of 5-1/2", for use on 10" (or greater) rise telescoping platforms. Raising and lowering of chairs from storage to usable position shall be accomplished by fully automatic means, with a minimum of effort. Comfort of the chairs shall be of prime importance in the design of the chair components, and design shall be based on properly supporting the human form for an extended period. Components shall be designed to facilitate an easy exchange of parts by semi-skilled workers should components become vandalized. The seat and the back shall be high impact-resistant molded plastic and the support structure of the chair shall be of modular, easily installed heavy gauge steel construction. The seat shall be automatically self-lifting to the 3/4 fold position, capable of full-fold to allow for additional passing room. Further, backs shall be capable of articulating while chairs are unoccupied to provide added passage space.

##### 2.2.1.1 Steel Panels

Steel panels shall be fabricated from not less than 20 gauge (1 mm). All metal parts shall be protected with a five-stage bonding process before being enameled. Metal parts shall be finished in high quality epoxy powder coated approved color and oven-baked.

##### 2.2.1.2 Plastic Panels

Plastic rear panels shall be one-piece injection molded plastic. Color and texture of plastic panels shall be in accordance with Section 09915 COLOR SCHEDULE.

##### 2.2.1.3 Foam Padding

Polyurethane foam shall be high density, fire retardant and shall be not less thickness indicated and shall be securely attached to the steel or indicated panel.

#### 2.2.2 Plastic Seats and Backs

Seats and backs shall be of high impact resistant blow-molded linear polyethylene plastic, one-piece, double wall design with textured surface. The face of the seat and back shall be compound-contour molded to promote comfort and shall be plain, uninterrupted by surface grooves with no exposed hardware above the armrests. The rear of the back and bottom of the seat shall have molded grooves to provide lateral strength. Further, seats and backs shall be provided with concealed, internal flanged steel support members to promote durability. The seat foundation shall be free from visible screws, bolts, open holes, and projections on the bottom, front, and sides. The front edge of each seat shall be embossed to receive a number plate. The upholstered seat unit shall be easily removable without removing

the foundation unit; and the covering shall be fastened to the frame in a manner that will permit easy reupholstering. Seats shall have a minimum 1-inch (25.4 mm) thick upholstered polyurethane foam cushion in primary seating and back area.

### 2.2.3 Hinges

Hinges shall be a counterweight mechanism using gravity to return to the upright position or of the full compensating type, completely enclosed, totally independent, free and easy in operation, and capable of compensating for circular installation, variation in installation conditions, and unevenness of floors. Hinge mechanism shall be of the push-back type to allow additional aisle space while in an open position. Each hinge shall have a noiseless, self-rising seat device, shall rise automatically to a uniform safety position of 3/4 fold at all times, and shall fold 100 percent when additional pressure is applied, to provide additional clearance. The hinges shall have oil-impregnated, self-lubricating, metal or brass alloy bearings that will not require further lubrication, or nylon bushings. Hinges shall have a spring tension adjustment mechanism to allow manual compensation for normal wear and fatigue.

### 2.2.4 Armrests

Armrests shall be wood with laminated plastic and in accordance with Section 09915 COLOR SCHEDULE.

### 2.2.5 Metal Plates

Metal number and letter plates for seat and row designations shall be the manufacturer's standard satin finished anodized aluminum having letters and numbers countersunk and filled in black.

## 2.3 DESIGN CRITERIA FOR TELESCOPING SEATING PLATFORM

### 2.3.1 Platform Criteria

Folding and telescopic seating shall be designed to support, in addition to its own weight, and the weight of added accessories, a uniformly distributed live load of not less than 100 lbs. per sq. ft. (488 kg. per sq. m.) of gross horizontal projection.

1. Seat boards and footrest shall be designed for a live load of not less than 120 lbs. per linear foot (179 kg. per linear m.).

2. A sway force applied to seats shall be 24 lbs. per linear ft. (36 kg. per linear m.) parallel to the seats and 10 lbs. per linear ft. (15 kg. per linear m.) perpendicular to the seats. Sway forces shall not be considered simultaneously applied.

### 2.3.2 Railing Requirements

Non-removable and folding aisle hand rails shall be provided. Aisle railings shall be permanently attached and fold for storage without the need for removal. Railings, posts and sockets designed to withstand the following forces applied separately:

1. Handrails shall be designed and constructed for:

- a. A concentrated load of 200 lbs. (91 kg.) applied at any point and in any direction.
- b. A uniform load of 50 lbs. per ft. (74 kg/m) applied in any direction. The concentrated and uniform loading conditions shall not be required to be applied simultaneously.

The concentrated and uniform loading conditions shall not be required to be applied simultaneously.

2. Guards shall be designed and constructed for:

- a. A concentrated load of 200 lbs. per ft. (91 kg/m) applied at any point and in any direction along the top railing member and
- b. A uniform load of 50 lbs. per ft. (74 kg/m) applied horizontally at the required guardrail height and simultaneous uniform load of 100 lbs. per ft. (149 kg/m) applied vertically downward at the top of the guardrail. The concentrated and uniform loading conditions shall not be required to be applied simultaneously.
- c. American Institute of Steel Construction (AISC), American Iron and Steel Institute (AISI) and Aluminum Association (AA) design criteria shall be the basis for calculation of member sizes and connections.

2.3.3 Platform Surfacing

Flooring surface shall be plywood with high density textured polyethylene surface. Color to be selected from Manufacturer's standard range of colors.

2.3.4 Electrical Work

Electrical materials shall conform to the requirements of Section 16415 ELECTRICAL WORK, INTERIOR.

2.4 TELESCOPING PLATFORM CHAIR SYSTEM

Telescoping platform chair system shall have fully automatic operation which shall raise and lock chairs with the operation of the platform. Each row shall rise into the fully upright, locked and usable position as the platform opens so that partial rows may be used without fully opening all rows. When closing, each row, including the first row, shall close automatically with the operation of the platform. Fully automatic operation shall allow operator to open or close the entire system with push of a single button.

2.4.1 Understructure System

1. Steel supports, rolling frames and attendant bracing shall be constructed of formed steel tubing. Tubing shall be a minimum 2" x 4" (5 cm x 10 cm) 11 gauge. Wheel channels are to be a minimum 10 gauge formed with internal structural square tubing welded between wheels 3 & 4 for rigidity of wheel channel.
2. Wheels shall not be less than 6" (15.24 cm) diameter x 1.5" (3.81 cm) non-marring soft rubber face to protect wood or synthetic floor surfaces. Each operating row shall have a minimum of 10 wheels.

3. Each fully skirted wheel channel shall be continuously in contact with adjacent channels by nylon guides, to eliminate metal to metal contact, and non-binding Quadra-Link guide rods to provide alignment when opening and closing. Lubrication shall not be required either at time of installation or periodically.

4. Each cantilever arm shall be securely welded to the post assembly and contain non-binding Quadra-Link interlocks with each row post assembly. Does not require lubrication at time of installation or periodically.

5. Vertical columns shall be high tensile steel structural tube to meet design criteria.

6. Deck stiffeners shall be bolted to both the rear beam and the decking with locking hardware.

#### 2.4.2 Deck System

1. Aluminum: Shall be interlocking, non-slip ribbed, extruded aluminum shapes. All decks shall consist of appropriate material thickness to meet design criteria. Ends to be protected with end caps.

2. Nosing: On platforms with aluminum deck shall be matching interlocking aluminum extrusion

3. Rear Risers: Shall be a minimum 12 gauge framed steel with black powder coated finish.

4. Formed Steel Deck Support Members: Shall connect the front nosing and rear riser members. These shall provide support for the decking, throughout its length and at intermediate locations to limit deflection.

5. Alternate deck surface shall be carpeting as selected by Contracting Officer from manufacturer's standards options.

#### 2.4.3 Finish

1. For rust resistance in standard or high humidity conditions all painted surfaces shall be finished in textured EPOXY POWDER COATED Semi-Gloss Black.

2. Steel rear riser, steel nose and diagonal knee bracing shall be pre-galvanized with a minimum of G-90 zinc plating.

### 2.5 PROPULSION SYSTEM FOR TELESCOPING SEATING PLATFORM

#### 2.5.1 Non-Friction Power

The entire group shall open and close, by the non-friction drive system, as a complete unit. The seating platform shall be broken into three unequal sections, as indicated on the drawings, each with its own power units as required based on the group length and number of rows involved. Hinging of the lower skirt board is not acceptable.

1. Each power unit drive shall be configured to eliminate the need for traction force on the floor. The Non-Friction system shall be capable of stopping and locking into any position during operation and shall feature limit switches for added safety. Rigid pusher links will maintain alignment of the bank during operation. ~~shall use one large 6" diameter by 9 1/2" long tube with non-marring 1/2" thick rubber covering to grip floor for opening and closing.~~

2. The power units shall develop ~~tractive~~ forces adequate to operate bleachers under normal conditions but inadequate to operate should significant obstacles be encountered.

The electrical contractor shall furnish and install conduit, wiring and junction box. Manufacturer shall provide all wiring from power source within bleacher seating including, but not limited to, pendant control, motor reversing contractor, safety switch and limit switches. Removable pendant control shall be hand held with forward and reverse button, plugging into a single receptacle. ~~Voltage, phasing and amperage to be as specified by seating manufacturer depending on the number of power units required.~~ The power supply for each power unit shall be 120/208 volt three phase. For wall-attached installations, power source to terminate in a surface mounted junction box above floor. For reverse units; power source to terminate in a junction box, flush mounted under first seating row in center of group. Electrical contractor shall perform the connections to the seating equipment at the junction box. All electrical parts and wiring shall be installed in complete accord with the National Electric Code. ALL SYSTEMS SHALL BE DESIGNED TO COMPLY WITH U.L. (U.L. Listing #E168517)

## 2.6 FINISH

Wood and metal surfaces shall be given the manufacturer's standard finishes.

## 2.7 COLOR

Color shall be in accordance with Section 09915 COLOR SCHEDULE.

## PART 3 EXECUTION

### 3.1 SEATING SYSTEM

Standards in each row shall be placed laterally so the aisle-end standards will be in alignment as indicated on seating layout drawing. The angle of inclination of backs shall be adjusted for variations in sightlines. Mechanical attachment of components shall be of sufficient flexibility so that when permanently assembled they will compensate for the changing dimensions laterally between standards caused by convergence toward the center. Seat and back attachments shall absorb inaccuracies in lateral spacing of standards at point of attachment caused by unevenness of floor. Varying lateral dimensions of backs and seats shall be in accordance with approved seating layout. Minimum width of seating unit shall be 20 inches (500 mm) and may be used only to complete a specific row dimension.

### 3.2 INSTALLATION

Installation of auditorium chairs shall be in accordance with the seating drawings and approved installation instructions.

End of Section

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This Section added by Amendment R0001

SECTION 13122

METAL BUILDING SYSTEM AND FOUNDATION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC ASD Manual (1989) Manual of Steel Construction Allowable Stress Design

AISC S342L (1993) Load and Resistance Factor Design Specification for Structural Steel Buildings

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 252 (1998) Welded and Seamless Steel Pipe Piles

ASTM A 36/A 36M (2000a) Carbon Structural Steel

ASTM A 463/A 463M (2000) Steel Sheet, Aluminum-Coated, by the Hot-Dip Process

ASTM A 500 (1999) Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

ASTM A 501 (1999) Hot-Formed Welded and Seamless Carbon Steel Structural Tubing

ASTM A 529/A 529M (2000) High-Strength Carbon-Manganese Steel of Structural Quality

ASTM A 53/A 53M (2001) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A 570/A 570M (1998) Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality

ASTM A 572/A 572M (2000a) High-Strength Low-Alloy Columbium-Vanadium Structural Steel

ASTM A 588/A 588M (2000a) High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick

ASTM A 606 (1998) Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance

ASTM A 607	(1998) Steel, Sheet and Strip, High-Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled and Cold-Rolled
ASTM A 618	(1999) Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing
ASTM A 653/A 653M	(2000) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 792/A 792M	(1999) Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
ASTM B 241/B 241M	(2000) Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
ASTM B 429	(2000) Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM D 2244	(1995) Calculation of Color Differences from Instrumentally Measured Color Coordinates
ASTM D 4214	(1998) Evaluating Degree of Chalking of Exterior Paint Films

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7	(1998) Minimum Design Loads for Buildings and Other Structures
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AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(2000) Structural Welding Code - Steel
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METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA)

MBMA Low Rise Manual	(1996) Low Rise Building Systems Manual
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SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA Arch. Manual	(1993; Errata; Addenda Oct 1997) Architectural Sheet Metal Manual
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U.S. ARMY CORPS OF ENGINEERS (USACE)

TI 809-04	(1998) Seismic Design for Buildings
TI 809-07	(1998) Design of Cold-Formed Load Bearing Steel Systems and Masonry Veneer/Steel Stud Walls

UNDERWRITERS LABORATORIES (UL)

UL 580	(1994; Rev thru Feb 1998) Tests for Uplift Resistance of Roof Assemblies
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## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

### SD-02 Shop Drawings

#### Drawings; G

Detail drawings of metal building system consisting of catalog cuts, design and erection drawings. Detail drawings of foundation system including reinforcing steel, concrete mix design and forming system. Engineered drawings shall bear the stamp of a qualified Professional Structural Engineer.

### SD-03 Product Data

#### Manufacturer's Instructions

Manufacturer's literature for individual building component systems

#### Qualifications; G

Qualifications of the manufacturer and qualifications and experience of the building erector. A brief list of locations where buildings of similar design have been used shall be included with the detail drawings and shall also include information regarding date of completion, name and address of owner, and how the structure is used.

### SD-05 Design Data

#### Calculations; G

Calculations bearing the stamp of a qualified Professional Structural Engineer for both the metal building system and the metal building foundation system.

### SD-07 Certificates

#### Metal Building Systems; G

a. A Certificate from the metal building manufacturer stating that the metal building was designed in accordance with MBMA Low Rise Manual.

b. Mill certification for structural bolts, framing steel, roofing and siding and steel wall liner panels.

c. Warranty certificate. At the completion of the project the Contractor shall furnish signed copies of the 5 year Warranty for Metal Building Roof System, a sample copy of which is attached to

this section, the 20-year Manufacturer's Material Warranties, and the Manufacturer's 20-year System Weathertightness Warranty where one is required.

### 1.3 GENERAL REQUIREMENTS

The metal building system covered under this specification shall be provided by a single manufacturer and shall include all components and assemblies that form a building. Structural Standing Seam Metal Roofing System, when specified, shall be furnished as part of a single manufacturer's system.

#### 1.3.1 Building Configurations

The foundation system shall be entirely compatible with the metal building system and shall be engineered by a qualified Professional Structural Engineer retained by the General Contractor.

Roof slope shall be as shown on the attachment to this specification section. Buildings shall be single-span structures with one of the following framing systems: self-framing or rigid frame. Gutters and downspouts shall be included in the metal building system. Building shall be a manufacturer's advertised product, except that dimensions shall be not less than those indicated. The minimum inside clear dimensions shall be as shown on the drawings.

The basic configuration of the pre-manufactured metal structure shall be as indicated in the attachment to this specification section. This configuration may be modified as required to better suit manufacturer's standard detailing; but must meet or exceed these basic parameters. This information is supplied only to provide general information such as, but not limited to, overall dimensions, roof pitch, minimum concrete slab thicknesses, column layout, wall elevations and ecology block configuration.

#### 1.3.2 Qualifications

##### 1.3.2.1 Manufacturer

Metal building shall be the product of a recognized steel building systems manufacturer who has been in the practice of manufacturing steel buildings for a period of not less than 5 years. The manufacturer shall be chiefly engaged in the practice of designing and fabricating metal building systems.

##### 1.3.2.2 Installer

Erector shall have specialized experience in the erection of steel building systems for a period of at least 3 years. The erector shall furnish temporary guys and bracing where needed for squaring, plumbing, and securing the structural framing against loads acting on the exposed framing, such as wind loads and seismic forces, as well as loads due to erection equipment and erection operation. Structural members shall not be field cut or altered. Welds, abrasions, and surfaces not shop primed shall be primed after erection.

### 1.4 DESIGN REQUIREMENTS

Criteria and definitions shall be in accordance with MBMA Low Rise Manual, except criteria for seismic loads shall be in accordance with TI 809-04 and

other loads and load combinations in accordance with ASCE 7. Wind loads shall be 85 mph (147 km/hr), Exposure C in accordance with ASCE 7. Metal building system shall be engineered by a qualified Professional Structural Engineer retained by the metal building system manufacturer.

#### 1.4.1 Foundations

Foundations shall be engineered by a qualified Professional Structural Engineer retained by the General Contractor. Foundations shall be designed for an allowable soil bearing pressure of 4000 psf (192 kPa), a minimum bottom of footing depth of 1.5 feet (457 mm) below finish floor elevation, a factor of safety of 1.5 for overturning, sliding and uplift, and a concrete compressive strength as specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE. Foundation system shall be engineered to meet or exceed minimum requirements of 1997 Uniform Building Code.

#### 1.4.2 Structural Members and Connections

Structural steel members and their connections shall be designed in accordance with AISC ASD Manual or AISC S342L. Structural cold-formed steel framing members and their connections shall be designed in accordance with TI 809-07. Framed openings shall be designed to structurally replace the covering and framing displaced. All connections shall be engineered by the metal building Professional Engineer.

#### 1.4.3 Roofing and Siding Design

Steel roofing and siding shall be designed in accordance with MBMA Low Rise Manual.

#### 1.4.4 Gutters And Downspouts

Gutters and downspouts shall be designed according to the requirements of SMACNA Arch. Manual for storms which should be exceeded only once in 5 years, with adequate provision for thermal expansion and contraction.

#### 1.4.5 Grounding and Lightning Protection

Grounding and lightning protection shall be provided as specified in Section 13100A LIGHTNING PROTECTION SYSTEM.

### 1.5 DESIGN ANALYSIS

The Contractor shall obtain the services of a licensed Professional Engineer to design the foundations. Seismic loads shall be computed in accordance with TI 809-04 SEISMIC DESIGN FOR BUILDINGS.

### 1.6 DELIVERY AND STORAGE

Materials shall be delivered to the site in a dry and undamaged condition and stored out of contact with the ground. Materials other than framing and structural members shall be covered with weathertight coverings and kept dry. Storage accommodations for roofing and siding shall provide good air circulation and protection from surface staining.

## 1.7 WARRANTIES

The Metal Building System (roofing, siding, and related components provided as part of the system) shall be warranted as described below against material and workmanship deficiencies, system deterioration caused by ordinary exposure to the elements and service design loads, leaks and wind uplift damage. Any emergency temporary repairs conducted by the owner shall not negate the warranties.

### 1.7.1 Prime Contractor's Weathertightness Warranty

The Metal Building System shall be warranted by the Contractor on a no penal sum basis for a period of five years against materials and workmanship deficiencies; system deterioration caused by exposure to the elements and/or inadequate resistance to specified service design loads, water leaks, and wind uplift damage. The Metal Building System covered under this warranty shall include, but is not limited to, the following: framing and structural members, roofing and siding panels and seams, interior or exterior gutters and downspouts, accessories, fasteners, trim, flashings and miscellaneous building closure items such as doors and windows (when furnished by the manufacturer), connectors, components, and fasteners, and other system components and assemblies installed to provide a weathertight system; and items specified in other sections of these specifications that become part of the metal building system. All material and workmanship deficiencies, system deterioration caused by exposure to the elements and/or inadequate resistance to specified service design loads, water leaks and wind uplift damage shall be repaired as approved by the Contracting Officer. See the attached Contractor's written warranty for issue resolution of warrantable defects. This warranty shall warrant and cover the entire cost of repair or replacement, including all material, labor, and related markups. The Contractor shall supplement this warranty with written warranties from the installer and/or system manufacturer, which shall be submitted along with Contractor's warranty. However, the Contractor is ultimately responsible for this warranty. The Contractor's written warranty shall be as outlined in attached **WARRANTY FOR METAL BUILDING SYSTEMS**, and start upon final acceptance of the facility. The Contractor shall provide a separate bond in an amount equal to the installed total metal building system cost in favor of the owner (Government) covering the Contractor's warranty responsibilities effective throughout the five year Contractor's warranty period for the entire metal building system as outlined above.

### 1.7.2 Manufacturer's Materials and System Weathertightness Warranties

The Contractor shall furnish, in writing, the following manufacturer's material warranties to the Contracting Officer which cover all Metal Building System components:

a. A manufacturer's 20 year material warranty warranting that the zinc-coated steel, aluminum-zinc alloy coated steel or aluminum-coated steel will not rupture, structurally fail, fracture, deteriorate, or become perforated under normal design atmospheric conditions and service design loads. Liability under this warranty shall be limited exclusively to the cost of either repairing or replacing nonconforming, ruptured, perforated, or structurally failed securement system, including fasteners and coil material.

b. A manufacturer's 20 year exterior material finish warranty on the factory colored finish warranting that the finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of eight, as determined by ASTM D 4214 test procedures; or change colors in excess of five CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. Liability under this warranty is exclusively limited to replacing the defective coated material.

## PART 2 PRODUCTS

### 2.1 FRAMING AND STRUCTURAL MEMBERS

Steel 1/8 inch (3 mm) or more in thickness shall conform to ASTM A 36/A 36M, ASTM A 529/A 529M, ASTM A 572/A 572M, or ASTM A 588/A 588M. Un-coated steel less than 1/8 inch (3 mm) in thickness shall conform to ASTM A 570/A 570M, ASTM A 606, or ASTM A 607. Galvanized steel shall conform to ASTM A 653/A 653M, G 90 coating designation, 0.045 inch (1.143 mm) minimum thickness. Aluminum-zinc coated steel shall conform to ASTM A 792/A 792M, [AZ 55] [AZ50] coating designation, 0.045 inch (1.143 mm) minimum thickness. Aluminum sheet shall conform to ASTM B 209 (ASTM B 209M); 0.032 inch (0.813 mm) minimum thickness. Structural pipe shall conform to ASTM A 53/A 53M, ASTM A 252, ASTM A 500, ASTM A 501, ASTM A 618, ASTM B 221 (ASTM B 221M), ASTM B 241/B 241M or ASTM B 429. Holes for structural connections shall be made in the shop.

### 2.2 ROOFING AND SIDING

Roofing and siding shall be steel and shall have a factory color finish. Steel roof and wall panels shall be minimum 22-gage thickness.

#### 2.2.1 Roofing

Length of sheets shall be sufficient to cover the entire length of any unbroken roof slope unless otherwise approved. Width of sheets with overlapping configurations shall provide not less than 24 inches (610 mm) of coverage in place. Panel shall have configurations for overlapping sheets. Roof deck assemblies shall be Class 90 as defined in UL 580. Height of corrugation at overlap of adjacent roof sheets shall be the building manufacturer's standard.

#### 2.2.2 Siding

Length of sheet shall be sufficient to cover the entire height of any unbroken height of wall surface unless otherwise approved. Width of sheets with overlapping configurations shall provide not less than 24 inches (610 mm) of coverage in place. Siding shall have configurations for overlapping adjacent sheets or interlocking ribs for securing adjacent sheets. Siding shall be fastened to framework using exposed or concealed fasteners.

#### 2.2.3 Steel Panels

Roofing and Siding shall be zinc-coated steel conforming to ASTM A 653/A 653M, G 90 coating designation; aluminum-zinc alloy coated steel conforming to ASTM A 792/A 792M, AZ 55 coating; or aluminum-coated steel conforming to ASTM A 463/A 463M, Type 2, coating designation T2E5. Panels shall be 0.0299 inch (0.759 mm) thick minimum (22GA).

#### 2.2.4 Factory Color Finish

Wall and roof panels shall have a factory applied polyvinylidene fluoride finish on the exposed side. The exterior finish shall consist of a baked-on topcoat with an appropriate prime coat. Color shall be as selected from manufacturers' standards, by the Contracting Officer. The exterior coating shall be a nominal 2 mil (0.050 mm) thickness consisting of a topcoat of not less than 0.7 mil (0.018 mm) dry film thickness and the paint manufacturer's recommended primer of not less than 0.2 mil (0.005 mm) thickness. The interior finish shall consist of the manufacturer's recommended thickness primer coating.

#### 2.2.5 Accessories

Flashing, trim, metal closure strips and curbs, fascia, caps, diverters and similar metal accessories shall be the manufacturer's standard products. Exposed metal accessories shall be finished to match the building finish. Molded closure strips shall be bituminous-saturated fiber, closed-cell or solid-cell synthetic rubber or neoprene, or polyvinyl chloride premolded to match configuration of the roofing or siding and shall not absorb or retain water.

#### 2.3 FASTENERS

Fasteners shall be as recommended by the manufacturer to meet the design strength requirements.

#### 2.4 SHOP PRIMING

Ferrous surfaces shall be cleaned of oil, grease, loose rust, loose mill scale and other foreign substances and shop primed. Primer coating shall be in accordance with the manufacturer's standard system.

#### 2.5 PRE-CAST CONCRETE BLOCK

Provide stackable pre-cast ecology blocks, as indicated in the attachment. Blocks shall be manufacturer's standard 2'-0" (610 mm) deep x 2'-0" (610 mm) high x 6'-0" (1830 mm) long unit. Units shall be constructed of recycled concrete and contain a tongue and groove profile for stacking alignment. The units shall have a minimum of one metal lifting ring. Weight can vary, based on content, but shall on average weight 3,500 lbs (1,306 kg) per unit. Use of recycled plastic aggregate content is acceptable, but shall not reduce the weight of the block to lower than 1,500 lbs (560 kg) per unit.

### PART 3 EXECUTION

#### 3.1 ERECTION

Dissimilar materials, which are not compatible when contacting each other, shall be insulated from each other by means of gaskets or insulating compounds. Improper or mis-located drill holes in panels shall be plugged with an oversize screw fastener and gasketed washer; however, panels with an excess of such holes or with such holes in critical locations shall not be used. Exposed surfaces shall be kept clean and free from sealant, metal cuttings, excess material from thermal cutting, and other foreign materials. Exposed surfaces, which have been thermally cut, shall be finished smooth within a tolerance of 1/8-inch (3 mm). Stained, discolored or damaged

sheets shall be removed from the site. Welding of steel shall conform to AWS D1.1.

#### 3.1.1 Framing Members and Anchor Bolts

Onsite flame cutting of framing members, with the exception of small access holes in structural beam or column webs, will not be permitted. Concrete work is specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE. Anchor bolts shall be accurately set by template while the concrete is in a plastic state. Members shall be accurately spaced to assure proper fitting of panels. As erection progresses, the work shall be securely fastened to resist the dead load and wind and erection stresses.

#### 3.1.2 Roofing and Siding Installation

Siding shall be applied with the longitudinal configurations in the vertical position. Roofing shall be applied with the longitudinal configurations in the direction of the roof slope. Accessories shall be fastened into framing members, except as otherwise approved. Closure strips shall be provided where necessary to provide weathertight construction. Fastener and fastener spacing shall be in accordance with manufacture design.

#### 3.1.3 Installation of Gutters and Downspouts

Gutters and downspouts shall be rigidly attached to the building. Spacing of cleats for gutters shall be 16 inches (400 mm) maximum. Spacing of brackets and spacers for gutters shall be 36 inches (1 m) maximum. Supports for downspouts shall be spaced according to manufacturer's recommendations.

### 3.2 FIELD PAINTING

Immediately upon detection, abraded or corroded spots on shop-painted surfaces shall be wire brushed and touched up with the same material used for the shop coat. Shop-primed ferrous surfaces exposed on the outside of the building and all shop-primed surfaces of doors and windows shall be painted with two coats of an approved exterior enamel. Factory color finished surfaces shall be touched up as necessary with the manufacturer's recommended touch-up paint.

### 3.3 FOUNDATION

Foundation system shall be installed in accordance with Section 03100 Structural Concrete Formwork, Section 03200 Concrete Reinforcement and Section 03300 Cast-In-Place Structural Concrete.

### 3.4 PRE-CAST CONCRETE BLOCK

Pre-cast concrete block shall be stacked horizontally and vertically aligned to the height indicated on the architectural contract drawings, within 1/8" in 1 foot (1 to 96) alignment tolerance.

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY  
FOR  
METAL BUILDING SYSTEM

FACILITY DESCRIPTION: \_\_\_\_\_

BUILDING NUMBER: \_\_\_\_\_

CORPS OF ENGINEERS CONTRACT NUMBER: \_\_\_\_\_

CONTRACTOR

CONTRACTOR: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

POINT OF CONTACT: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

OWNER

OWNER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

POINT OF CONTACT: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

CONSTRUCTION AGENT

CONSTRUCTION AGENT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

POINT OF CONTACT: \_\_\_\_\_

—  
TELEPHONE NUMBER: \_\_\_\_\_

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY  
FOR  
METAL BUILDING SYSTEM  
(continued)

THE METAL BUILDING SYSTEM INSTALLED ON THE ABOVE NAMED BUILDING IS WARRANTED BY [\_\_\_\_\_] FOR A PERIOD OF FIVE (5) YEARS AGAINST WORKMANSHIP AND MATERIAL DEFICIENCIES, WIND DAMAGE AND STRUCTURAL FAILURE WITHIN PROJECT SPECIFIED DESIGN LOADS, AND LEAKAGE. THE METAL BUILDING SYSTEM COVERED UNDER THIS WARRANTY SHALL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING: FRAMING AND STRUCTURAL MEMBERS, ROOFING AND SIDING PANELS AND SEAMS, INTERIOR OR EXTERIOR GUTTERS AND DOWNSPOUTS, ACCESSORIES, TRIM, FLASHINGS AND MISCELLANEOUS BUILDING CLOSURE ITEMS SUCH AS DOORS AND WINDOWS (WHEN FURNISHED BY THE MANUFACTURER), CONNECTORS, COMPONENTS, AND FASTENERS, AND OTHER SYSTEM COMPONENTS AND ASSEMBLIES INSTALLED TO PROVIDE A WEATHERTIGHT SYSTEM; AND ITEMS SPECIFIED IN OTHER SECTIONS OF THESE SPECIFICATIONS THAT BECOME PART OF THE METAL BUILDING SYSTEM. ALL MATERIAL AND WORKMANSHIP DEFICIENCIES, SYSTEM DETERIORATION CAUSED BY EXPOSURE TO THE ELEMENTS AND/OR INADEQUATE RESISTANCE TO SPECIFIED SERVICE DESIGN LOADS, WATER LEAKS AND WIND UPLIFT DAMAGE SHALL BE REPAIRED AS APPROVED BY THE CONTRACTING OFFICER.

ALL MATERIAL DEFICIENCIES, WIND DAMAGE, STRUCTURAL FAILURE AND LEAKAGE ASSOCIATED WITH THE METAL BUILDING SYSTEM COVERED UNDER THIS WARRANTY SHALL BE REPAIRED AS APPROVED BY THE CONTRACTING OFFICER. THIS WARRANTY SHALL COVER THE ENTIRE COST OF REPAIR OR REPLACEMENT, INCLUDING ALL MATERIAL, LABOR, AND RELATED MARKUPS. THE ABOVE REFERENCED WARRANTY COMMENCED ON THE DATE OF FINAL ACCEPTANCE ON [\_\_\_\_\_] AND WILL REMAIN IN EFFECT FOR STATED DURATION FROM THIS DATE.

SIGNED, DATED, AND NOTARIZED (BY COMPANY PRESIDENT)

\_\_\_\_\_  
(Company President)

\_\_\_\_\_  
(Date)

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY  
FOR  
METAL BUILDING SYSTEM  
(continued)

THE CONTRACTOR SHALL SUPPLEMENT THIS WARRANTY WITH WRITTEN WARRANTIES FROM THE MANUFACTURER AND/OR INSTALLER OF THE METAL BUILDING SYSTEM, WHICH SHALL BE SUBMITTED ALONG WITH THE CONTRACTOR'S WARRANTY. HOWEVER, THE CONTRACTOR WILL BE ULTIMATELY RESPONSIBLE FOR THIS WARRANTY AS OUTLINED IN THE SPECIFICATIONS AND AS INDICATED IN THIS WARRANTY.

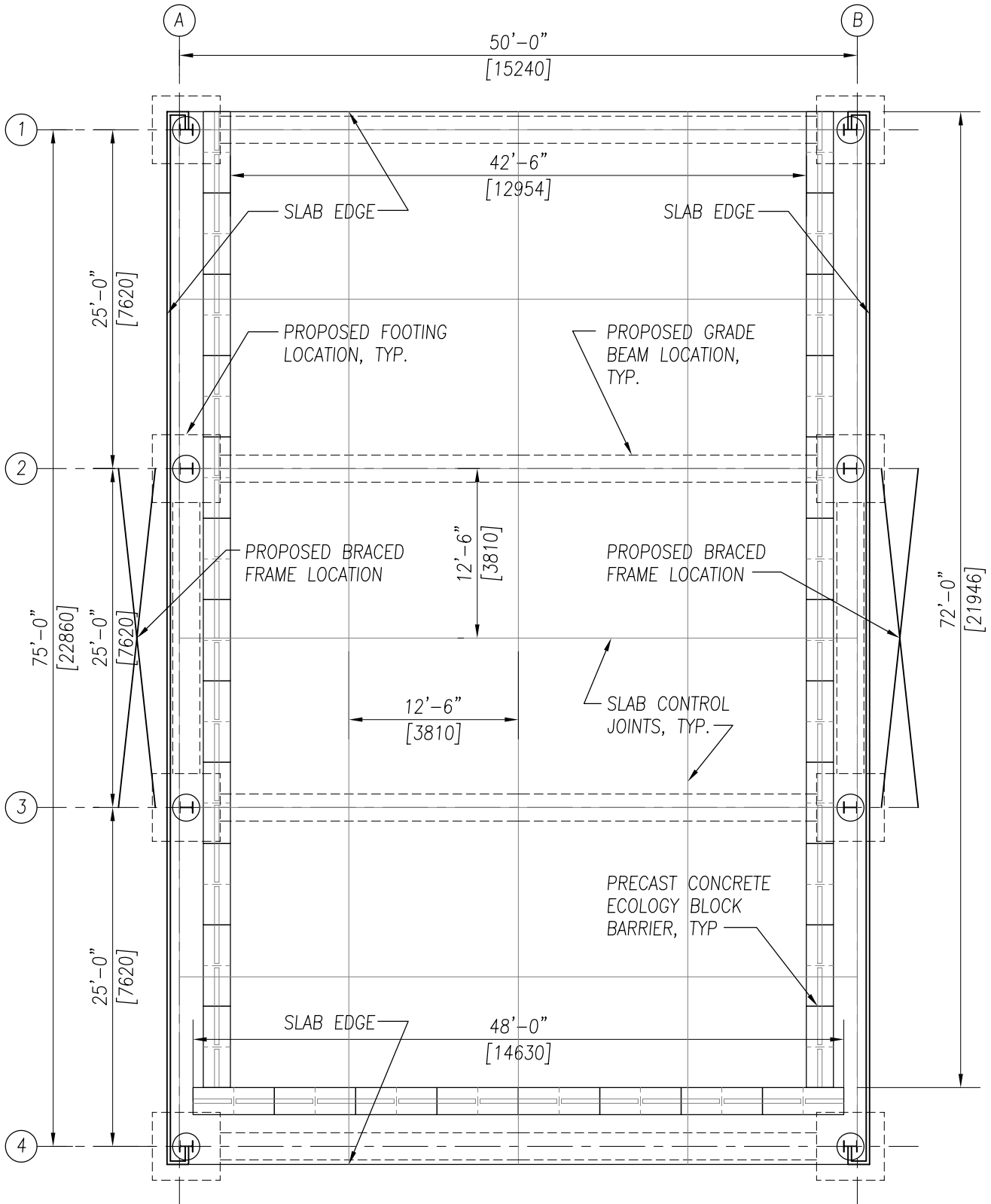
EXCLUSIONS FROM COVERAGE

1. NATURAL DISASTERS, ACTS OF GOD (LIGHTNING, FIRE, EXPLOSIONS, SUSTAINED WIND FORCES IN EXCESS OF THE DESIGN CRITERIA, EARTHQUAKES, AND HAIL).
2. ACTS OF NEGLIGENCE OR ABUSE OR MISUSE BY GOVERNMENT OR OTHER PERSONNEL, INCLUDING ACCIDENTS, VANDALISM, CIVIL DISOBEDIENCE, WAR, OR DAMAGE CAUSED BY FALLING OBJECTS.
3. DAMAGE BY STRUCTURAL FAILURE, SETTLEMENT, MOVEMENT, DISTORTION, WARPAGE, OR DISPLACEMENT OF THE BUILDING STRUCTURE OR ALTERATIONS MADE TO THE BUILDING.
4. CORROSION CAUSED BY EXPOSURE TO CORROSIVE CHEMICALS, ASH OR FUMES GENERATED OR RELEASED INSIDE OR OUTSIDE THE BUILDING FROM CHEMICAL PLANTS, FOUNDRIES, PLATING WORKS, KILNS, FERTILIZER FACTORIES, PAPER PLANTS, AND THE LIKE.
5. FAILURE OF ANY PART OF THE BUILDING SYSTEM DUE TO ACTIONS BY THE OWNER WHICH INHIBIT FREE DRAINAGE FROM THE ROOF, GUTTERS AND DOWNSPOUTS; OR CONDITIONS WHICH CREATE PONDING WATER ON THE ROOF OR AGAINST THE BUILDING SIDING.
6. THIS WARRANTY APPLIES TO THE METAL BUILDING SYSTEM. IT DOES NOT INCLUDE ANY CONSEQUENTIAL DAMAGE TO THE BUILDING INTERIOR OR CONTENTS WHICH IS COVERED BY THE WARRANTY OF CONSTRUCTION CLAUSE INCLUDED IN THIS CONTRACT.
7. THIS WARRANTY CANNOT BE TRANSFERRED TO ANOTHER OWNER WITHOUT WRITTEN CONSENT OF THE CONTRACTOR AND THIS WARRANTY AND THE CONTRACT PROVISIONS WILL TAKE PRECEDENCE OVER ANY CONFLICTS WITH STATE STATUTES. REPORTS OF LEAKS AND BUILDING SYSTEM DEFICIENCIES SHALL BE RESPONDED TO WITHIN 48 HOURS OF RECEIPT OF NOTICE BY TELEPHONE OR IN WRITING FROM EITHER THE OWNER, OR CONTRACTING OFFICER. EMERGENCY REPAIRS, TO PREVENT FURTHER ROOF LEAKS, SHALL BE INITIATED IMMEDIATELY; A WRITTEN PLAN SHALL BE SUBMITTED FOR APPROVAL TO REPAIR OR REPLACE THIS SSSMR SYSTEM WITHIN SEVEN CALENDAR DAYS. ACTUAL WORK FOR PERMANENT REPAIRS OR REPLACEMENT SHALL BE STARTED WITHIN 30 DAYS AFTER RECEIPT OF NOTICE, AND COMPLETED WITHIN A REASONABLE TIME FRAME. IF THE CONTRACTOR FAILS TO ADEQUATELY RESPOND TO THE WARRANTY PROVISIONS, AS STATED

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY  
FOR  
METAL BUILDING SYSTEM  
(Exclusions from Coverage Continued)

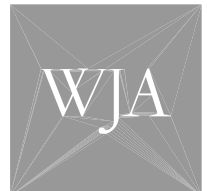
IN THE CONTRACT AND AS CONTAINED HEREIN, THE CONTRACTING OFFICER MAY HAVE THE METAL BUILDING SYSTEM REPLACED OR REPAIRED BY OTHERS AND CHARGE THE COST TO THE CONTRACTOR. IN THE EVENT THE CONTRACTOR DISPUTES THE EXISTENCE OF A WARRANTABLE DEFECT, THE CONTRACTOR MAY CHALLENGE THE OWNER'S DEMAND FOR REPAIRS AND/OR REPLACEMENT DIRECTED BY THE OWNER OR CONTRACTING OFFICER EITHER BY REQUESTING A CONTRACTING OFFICER'S DECISION, UNDER THE CONTRACT DISPUTES ACT, OR BY REQUESTING THAT AN ARBITRATOR RESOLVE THE ISSUE. THE REQUEST FOR AN ARBITRATOR MUST BE MADE WITHIN 48 HOURS OF BEING NOTIFIED OF THE DISPUTED DEFECTS. UPON BEING INVOKED THE PARTIES SHALL, WITHIN 10 DAYS JOINTLY REQUEST A LIST OF FIVE (5) ARBITRATORS FROM THE FEDERAL MEDIATION AND CONCILIATION SERVICE. THE PARTIES SHALL CONFER WITHIN 10 DAYS AFTER RECEIPT OF THE LIST TO SEEK AGREEMENT ON AN ARBITRATOR. IF THE PARTIES CANNOT AGREE ON AN ARBITRATOR, THE CONTRACTING OFFICER AND THE PRESIDENT OF THE CONTRACTOR'S COMPANY WILL STRIKE ONE (1) NAME FROM THE LIST ALTERNATIVELY UNTIL ONE NAME REMAINS. THE REMAINING PERSON SHALL BE THE DULY SELECTED ARBITRATOR. THE COSTS OF THE ARBITRATION, INCLUDING THE ARBITRATOR'S FEE AND EXPENSES, COURT REPORTER, COURTROOM OR SITE SELECTED ETC., SHALL BE BORNE EQUALLY BETWEEN THE PARTIES. EITHER PARTY DESIRING A COPY OF THE TRANSCRIPT SHALL PAY FOR THE TRANSCRIPT. A HEARING WILL BE HELD AS SOON AS THE PARTIES CAN MUTUALLY AGREE. A WRITTEN ARBITRATOR'S DECISION WILL BE REQUESTED NOT LATER THAN 30 DAYS FOLLOWING THE HEARING. THE DECISION OF THE ARBITRATOR WILL NOT BE BINDING; HOWEVER, IT WILL BE ADMISSIBLE IN ANY SUBSEQUENT APPEAL UNDER THE CONTRACT DISPUTES ACT.

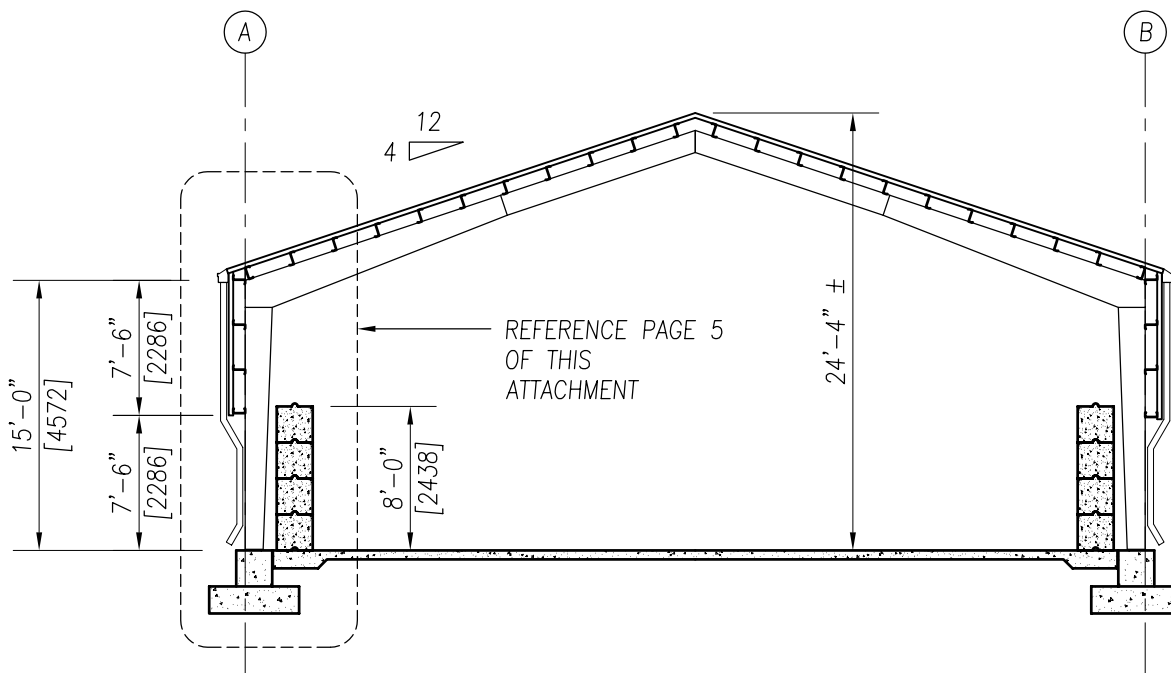
A FRAMED COPY OF THIS WARRANTY SHALL BE POSTED IN THE MECHANICAL ROOM OR OTHER APPROVED LOCATION DURING THE ENTIRE WARRANTY PERIOD.



US Army Corps  
of Engineers  
Seattle District

BATTLE SIMULATION CENTER  
SECTION 13122 – ATTACHMENT  
METAL BUILDING SYSTEM AND FOUNDATION  
FLOOR PLAN – PAGE 1 OF 5  
FORT LEWIS FY03 MCA PN 25057 WASHINGTON



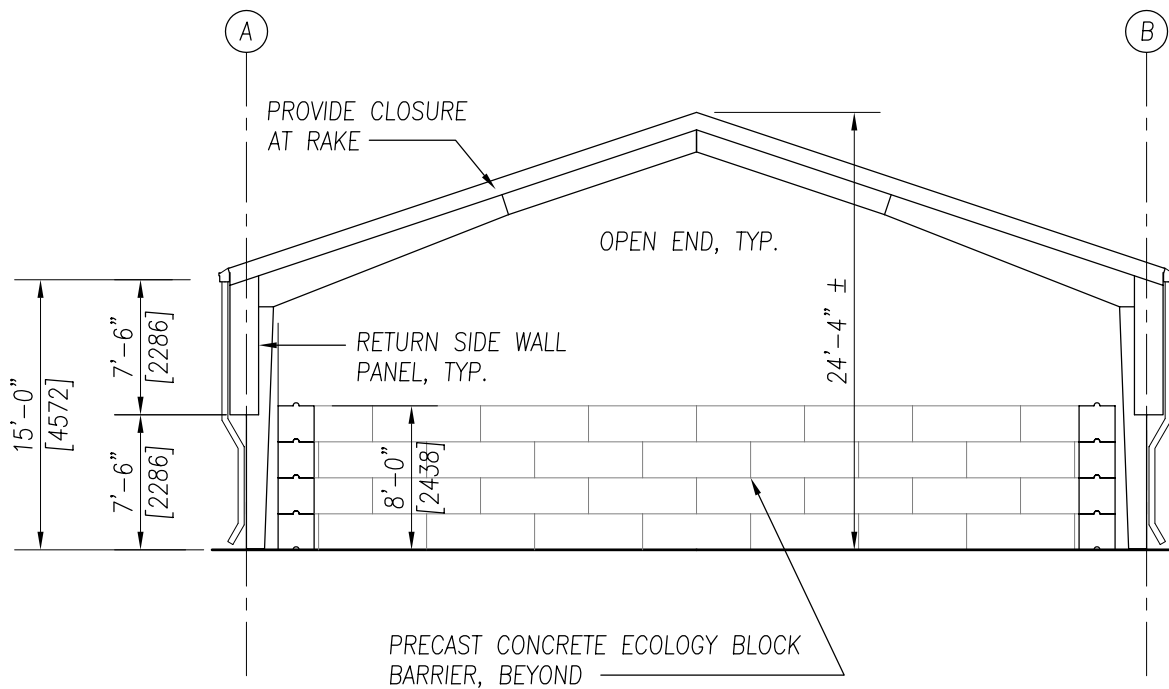


US Army Corps  
of Engineers  
Seattle District

BATTLE SIMULATION CENTER  
SECTION 13122 – ATTACHMENT  
METAL BUILDING SYSTEM AND FOUNDATION  
SECTION– PAGE 2 OF 5

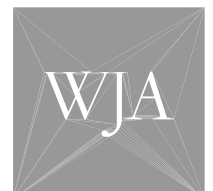
FORT LEWIS FY03 MCA PN 25057 WASHINGTON

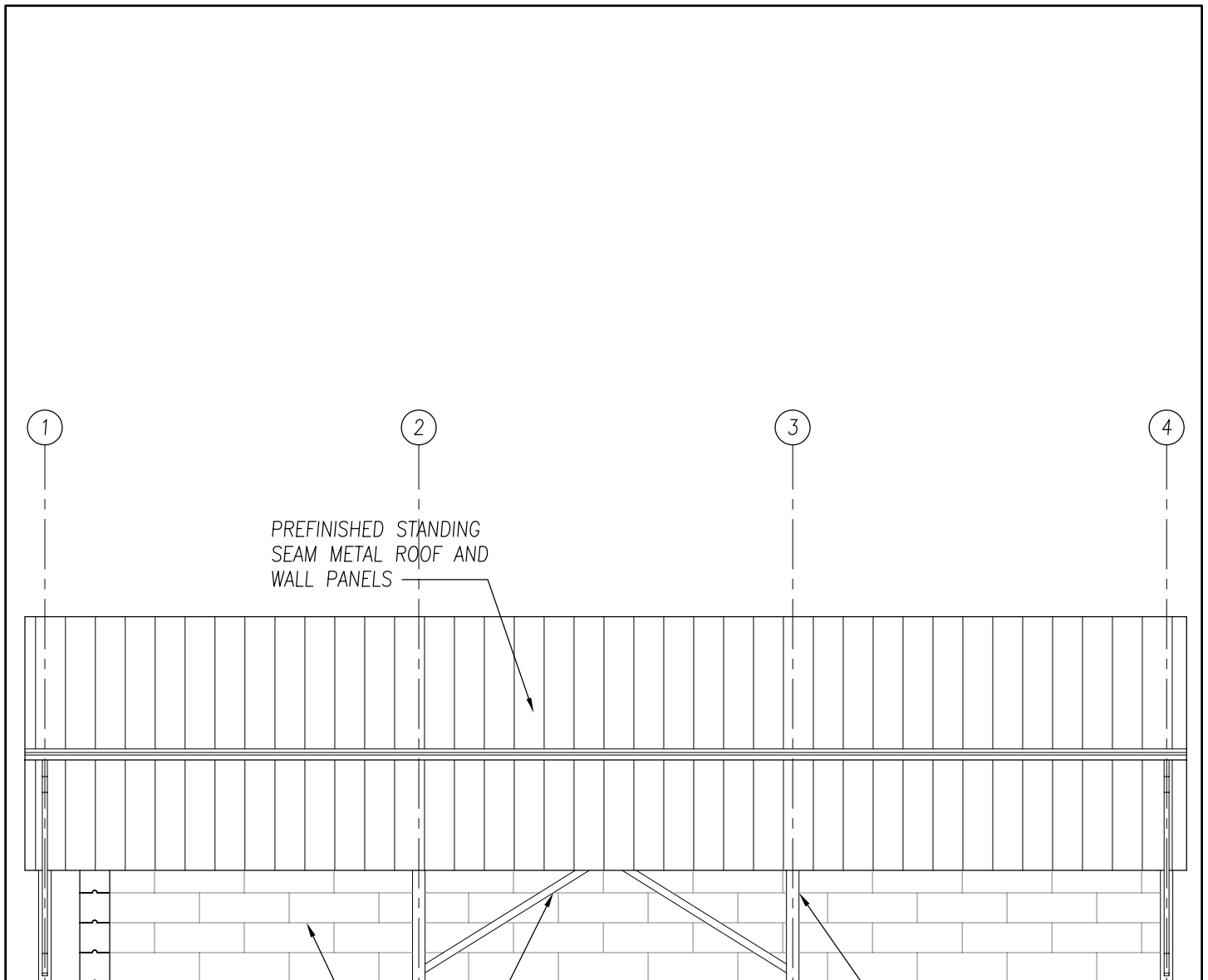




US Army Corps  
of Engineers  
Seattle District

BATTLE SIMULATION CENTER  
SECTION 13122 – ATTACHMENT  
METAL BUILDING SYSTEM AND FOUNDATION  
END ELEVATION, TYPICAL – PAGE 3 OF 5  
FORT LEWIS FY03 MCA PN 25057 WASHINGTON





PREFINISHED STANDING  
SEAM METAL ROOF AND  
WALL PANELS

PRECAST CONCRETE  
ECOLOGY BLOCK BARRIER

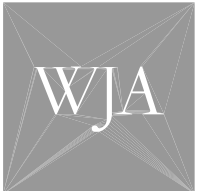
STEEL LATERAL BRACE

STEEL FRAME



US Army Corps  
of Engineers  
Seattle District

BATTLE SIMULATION CENTER  
SECTION 13122 – ATTACHMENT  
METAL BUILDING SYSTEM AND FOUNDATION  
SIDE ELEVATION, TYP. – PAGE 4 OF 5  
FORT LEWIS    FY03 MCA PN 25057    WASHINGTON



OUTSIDE FACE OF STEEL FRAME

A

PURLINS AT 2'-6" [762] ON CENTER MINIMUM.

PRE-ENGINEERED METAL BUILDING SYSTEM - REFERENCE SPECIFICATION 13122

PREFINISHED STANDING SEAM METAL ROOF AND WALL PANELS

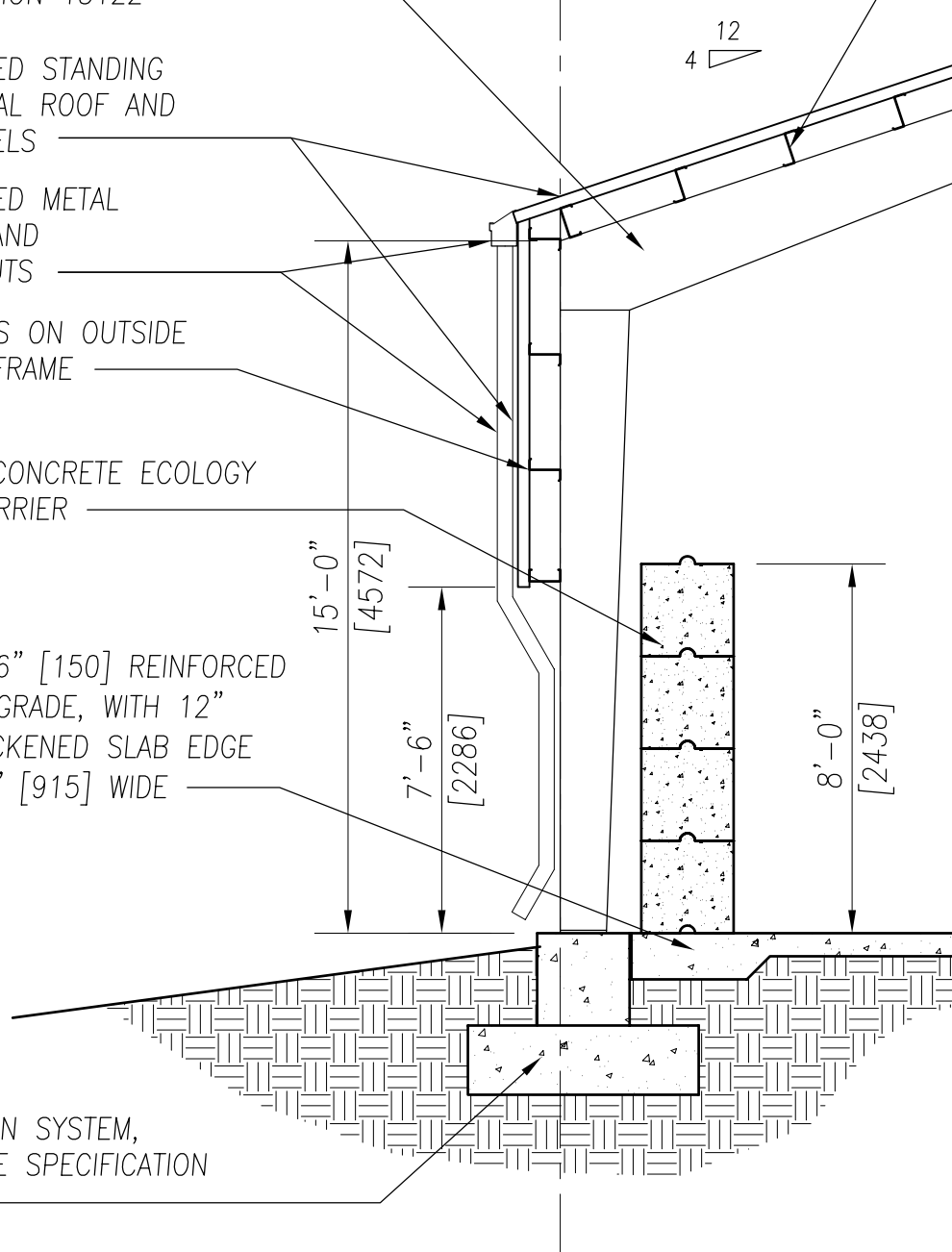
PREFINISHED METAL GUTTERS AND DOWNSPOUTS

WIND GIRTS ON OUTSIDE FACE OF FRAME

PRECAST CONCRETE ECOLOGY BLOCK BARRIER

ISOLATED 6" [150] REINFORCED SLAB ON GRADE, WITH 12" [305] THICKENED SLAB EDGE FOR 3'-0" [915] WIDE

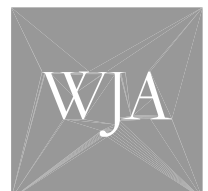
FOUNDATION SYSTEM, REFERENCE SPECIFICATION 13122



US Army Corps  
of Engineers  
Seattle District

BATTLE SIMULATION CENTER  
SECTION 13122 - ATTACHMENT  
METAL BUILDING SYSTEM AND FOUNDATION  
WALL SECTION - PAGE 5 OF 5

FORT LEWIS FY03 MCA PN 25057 WASHINGTON



This Section added by Amendment R0001

SECTION 16711

TELEPHONE/DATA SYSTEM, OUTSIDE PLANT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C62.61 (1993) Gas Tube Surge Arresters on Wire Line Telephone Circuits

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 2239 (1999) Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

ANSI/EIA-455-81A-91 (1992) FOTP-81 Compound Flow (Drip) Test for Filled Fiber Optic Cable

ANSI/EIA/TIA-455-30B (1991) FOTP-30 Frequency Domain Measurement of Multimode Optical Fiber Information Transmission Capacity

ANSI/EIA/TIA-455-53A (1990) FOTP-53 Attenuation by Substitution Measurement for Multimode Graded-Index Optical Fibers or Fiber Assemblies Used in Long Length Communications Systems

ANSI/EIA/TIA-455-B (1998) Test procedures for Fiber Optic Fibers, Cables, Transducers, Censors, Connector and terminating devices, and other fiber optic components (ANSI)

ANSI/EIA/TIA-455-78A-98 (1990; R 1998) FOTP-78 Spectral Attenuation Cutback Measurement for Single Mode Optical Fibers

ANSI/TIA/EIA-568-B.1 (2001; Addendum 2001) Commercial Building Telecommunications Cabling Standard Part 1 - General Requirements

ANSI/TIA/EIA-568-B.3 (2000; Addendum 2002) Commercial Building Telecommunications Cabling Standard Part 3 - Optical Fiber Cabling Components Standard

ANSI/TIA/EIA-606 Administration Standard for Commercial Telecommunications Infrastructure

ANSI/TIA/EIA-607 (2002) Commercial Building Grounding and Bonding Requirements for Telecommunications

ANSI/EIA/TIA-758 (1999) Customer Owned Outside Plant Telecommunications Cabling Standard and Addendum

ANSI/EIA/TIA-598-B (2001) Optical Fiber Cable Color Coding

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2002) National Electrical Safety Code

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-85-625 (1996) Air core, Polyolefin Insulated, Copper Conductor Telecommunications Cable

ICEA S-87-640 (1999) Fiber Optic Outside Plant Communications Cable

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2002) National Electrical Code

U.S. DEPARTMENT OF AGRICULTURE (USDA)

RUS REA Bull 345-39 (2000) Telephone Section Protectors

RUS 345-50 (2000) Trunk Carrier Systems

RUS 345-65 (2000) Shield Bonding Connectors

RUS 345-72 (2000) Field Splice Closures

RUS REA Bull 345-151 (2000) Conduit and Manhole Construction, REA Form 515c

RUS Bull 1751F-635 (2000) Aerial Plant Construction

RUS Bull 1751F-643 (2000) Underground Plant Design

RUS Bull 1753F-302 (2000) Outside Plant Housings and Serving Area Interface Systems

RUS Bull 1753F-401 (PC-2) (2000) RUS Standard for Splicing Copper and Fiber Optic Cables

RUS IP 344-2 (2000) List of Materials Acceptable for Use on Telecommunications Systems of RUS Borrowers

RUS REA Bull 1751F-641 (2000) Construction of Buried Plant

RUS REA Bull 1753F-201 (2000) Acceptance Tests and Measurements of Telephone Plant

RUS REA Bull 1753F-205	(2000) REA Specification for Filled Telephone Cables
RUS REA Bull 1753F-207	(2000) Terminating (TIP) Cable
RUS REA Bull 1753F-208	(2000) Filled Telephone Cables with Expanded Insulation
RUS REA Bull 1753F-601 (PE-90)	(2000) REA Specification for Filled Fiber Optic Cables

\*All non-listed yet applicable and current RUS bulletins and publications must be adhered to.

#### UNDERWRITERS LABORATORIES (UL)

UL 497	(1995; Rev Oct 1999) Protectors for Paired Conductor Communication Circuits
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UL 50 (1995; Rev thru Nov 1999) Enclosures for Electrical Equipment

#### 1.2 SYSTEM DESCRIPTION

The outside plant cabling system shall consist of all copper and fiber optic cable, conduit, manholes/vaults, splices, terminations, protection, racks, enclosures, etc. required to provide signal paths and associated terminations to/from building 2003 to the new BSC facility (via Range Control Hut) as indicated on drawings. The work consists of furnishing, installing, testing and making operational and standards compliant, a complete outside plant system for continuous use.

#### 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with the SUBMITTAL PROCEDURES specification section:

Submittal List; G/COE (Corp of Engineers), DOIM

Within fifteen (15) days after date of execution of Contract Documents or issuance of Owner's letter of intent to execute the Contract or at the time of approval of the Physical Design documentation by the Project Coordinator, submit for review and acceptance a list of all materials, components, equipment, or system manufacturers whose products are proposed, as well as names of all sub-tier Contractors this trade proposes to employ with qualifications of selection and specific functions they are to perform.

Any requests for substitutions of equipment or materials must be submitted and returned prior to submitting the Submittal List. Only specified or accepted manufacturers or suppliers shall appear on the Submittal List.

The complete Submittal List must be reviewed and accepted by the Project Coordinator prior to submittal of shop drawings and

manufacturer's data. No shop drawings and manufacturer's data will be processed without an accepted Submittal List.

The Submittal List shall include all materials, equipment, and systems as identified to complete the Contractors work under this project.

SD-02 Shop Drawings

Manufacturers Data; G, DOIM

The contractor is responsible for submittals as part of the quality assurance process to ensure that the proposed materials and resulting integration meets or exceeds the intention of the specifications. Where changes are recommended to improve the functionality, quality, and manageability of the overall project these are to be annotated and accompanied with an explanation.

All submittals shall be complete and contain all required and detailed information.

The Contractor shall make any corrections required by the Project Coordinator and shall resubmit the required number of corrected copies of the shop drawings or new samples of materials until approved. The Contractor shall direct specific attention in writing to any new revisions other than the corrections requested by the Project Coordinator on previous submissions.

No work requiring a shop drawings or sample submission shall be commenced until the submission has been approved by the Project Coordinator. All such work shall be in accordance with approved shop drawings and samples.

Submit manufacturer's data for all materials and equipment furnished as required in each of the individual specification sections relating to this project.

Manufactures' product data shall consist of illustrations, standard schedules, performance charts, instructions, brochures, diagrams, cut sheets and other information furnished by the contractor to illustrate a material, product, component, equipment, or system for some portion of the work / project.

Samples as requested shall be physical examples that represent materials, equipment or workmanship and establish standards by which the work will be judged.

Samples, drawings, specifications, catalogs, etc., submitted to the Project Coordinator for review shall be properly labeled, indicating specific service for which the material, product, component, equipment or system is to be used.

Catalogs, pamphlets, or other documents submitted to the Project Coordinator to describe items on which review is being requested shall be specific. The identification of items submitted in catalog, pamphlet, etc. shall be clearly made in ink (highlighter) or tag form. Data of a general nature will be immediately returned for re-submittal.

Acceptance of any submitted data or shop drawings of material, product, component, equipment, system, devices, arrangement, and layout shall not relieve the Contractor from the responsibility of furnishing same of proper dimensions and weight, capacities, sizes, features, quantity, electrically and mechanically interchangeable, quality and installation details to perform efficiently the requirements and intent of the contract. Such acceptance shall not relieve Contractor from responsibility for errors, omissions or inadequacies of any sort on submitted data or shop drawings.

Shop drawings shall contain job titles and reference to the applicable drawing(s) and specification article or system. Where the Contractor is providing the physical design, the references are to be cross-indexed to his design and to the system. If there is a question as to the applicability, the Contractor is responsible for explaining to the Project Coordinator where the submittal fits into the project.

Individual shop drawings submittals that are not submitted in the manner described will be returned without review at the discretion of the Project Coordinator.

Where materials or equipment are specified to conform, be constructed or tested to meet specific requirements, certification that the items provided do conform to such requirements shall be provided. Certification by a nationally recognized testing laboratory that a representative sample has been tested to meet the requirements, or a published catalog specification statement to the effect that the item meets the referenced standard, will be acceptable as evidence that the item conforms. Compliance with these requirements does not relieve the Contractor from compliance with other requirements of the specifications.

Telephone System; G, DOIM  
Installation; G, DOIM

Detail drawings, consisting of a complete list of equipment and material, including manufacturer's descriptive and technical literature, performance charts and curves, and catalog cuts. Detail drawings shall also contain complete configuration information, wiring diagrams and any other details required to demonstrate that the cable system has been coordinated to support the transmission systems identified in the specifications and drawings. Drawings shall show proposed layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of the work including clearance for maintenance and operations.

Record Drawings; G, DOIM

Record drawings for the installed wiring system showing the actual location of all cable terminations, splices, routing, and size and type of all cables. The identifier for each termination and cable shall appear on the drawings. The drawings shall include gauge and pair or fiber-count for each cable, duct and inner duct arrangement, or conductor assignment of outside plant, and protector and connector block layout at the termination points after installation.

#### SD-03 Product Data

Spare Parts; G, DOIM  
Equipment; G, DOIM

A data list of recommended spare parts, tools, and test equipment for each different item of material and equipment specified prior to beneficial occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of supply.

Installation; G, DOIM

Printed copies of the manufacturer's recommendations for the material being installed, prior to installation. Installation of the item will not be allowed to proceed where installation procedures, or any part thereof, are required to be in accordance with those recommendations until the recommendations are received and approved.

Acceptance Tests; G, DOIM

Test plans defining all tests required to ensure that the system meets specified requirements. The test plans shall define milestones for the tests, equipment, personnel, facilities, and supplies required. The test plans shall identify the capabilities and functions to be tested.

Cutover and Records; G, DOIM

The cutover plan shall provide procedures and schedules for relocation of facility station numbers without interrupting service to any active location.

#### SD-06 Test Reports

Acceptance Tests; G, DOIM

Test reports in booklet form showing all field tests performed, upon completion and testing of the installed system. Measurements shall be tabulated on a pair by pair or strand by strand basis.

#### SD-07 Certificates

Telephone System; G, DOIM

Proof that the items furnished under this section conform to the specified requirements in FCC, ICEA, REA, RUS, ANSI, ASTM, NFPA, EIA, or UL, where materials and equipment are so specified.

Qualifications; G, DOIM

The qualifications of the contactor company, manufacturers to be used, cable splicers and installation supervisor as specified.

#### 1.4 QUALIFICATIONS

##### 1.4.1 Contractor

All work under this section shall be performed by and all equipment shall be furnished and installed by a Certified Telecommunications Contractor, hereafter referred to as the Contractor. The Contractor shall have the following qualifications in Telecommunications Systems installation to be considered certified:

- a. Contractor shall have a minimum of (5) years experience in the application, installation and testing of the specified systems and equipment. Specifically large-scale Project/OSP experience.
- b. Contractor shall be in good standing with the manufacturer providing the products and system warranty documentation (if applicable), have been in the manufacturers warranty program for at least (1) full year, and provide proof of company certification from the manufacturer(s).
- c. All supervisors and installers assigned to the installation of this system or any of its components shall have factory certification from each equipment manufacturer that they are qualified to install and test the provided products.
- d. Contractor shall be capable of providing a designated, on-site, non-working Project Manager/Superintendent with Registered Communications Distribution Designer (RCDD) certification from BICSI to oversee the project installation and to facilitate all Owner correspondence throughout the course of the project with the FLBSC Project Coordinator/DOIM.
- e. Contractor must provide certification for each technician responsible for the final testing of the installed cabling system. Submit information on the testers to be used.
- f. Contractor must be licensed, bonded, and insured in the State of Washington.
- g. The contractor shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar type and size. The contractor shall own and maintain tools and equipment necessary for successful installation and testing of fiber optical and copper distribution systems and have personnel who are adequately trained in the use of such tools and equipment. OSHA and/or Ft. Lewis safety requirements shall be followed at all times.

##### 1.4.2 Cable Installers

Provide installers experienced in the installation of large multi-pair count copper cables and fiber optic cables. Installers shall have a minimum of 2-years of experience in the placing, terminating, and splicing of copper and fiber optic cables. They shall be supervised on site at all times by someone with a minimum of 5-years of similar experience. Where product certification is being provided by the manufacturer the Contractor shall use manufacturer certified installers.

#### 1.4.3 Cable Splicing and Termination

All cable splicers shall have training in the proper techniques and have a minimum of 3 years experience in splicing and terminating the specified cables.

#### 1.4.4 Manufacturers

The cable, equipment, and hardware provided shall be from manufacturers that have a minimum of 5 years experience in producing the types of cable, equipment, and hardware specified and necessary for the successful long-term performance of the system.

### 1.5 DELIVERY AND STORAGE

#### 1.5.1 Cable Requirements

All cable shall be shipped on reels. The diameter of the drum shall be large enough to prevent damage to the cable during reeling and unreeling. The reels shall be constructed to prevent damage during shipment and handling. The outer end of the cable shall be securely fastened to the reel head to prevent the cable from becoming loose in transit. The inner end of the cable shall project into a slot in the side of the reel, or into a housing on the inner slot of the drum, with sufficient length to make it available for testing. The inner end shall be fastened to prevent the cable from becoming loose during installation. End seals shall be applied to each of the cables to prevent moisture from entering the cable. The reels with cable shall be suitable for outside storage conditions when the temperature ranges from minus 40 to plus 65 degrees C, (minus 40 to plus 148 degrees F,) with relative humidity from 0 to 100 percent.

#### 1.5.2 Equipment

All equipment shall be stored with protection from the weather, humidity and temperature variations, dirt and dust, or other contaminants, in accordance with the manufacturer's requirements.

### 1.6 SPECIAL REQUIREMENTS FOR CABLE ROUTING AND INSTALLATION

#### 1.6.1 Cabling

All communications cabling used throughout this project shall comply with the requirements as outlined in the National Electric Code (NEC®) Articles 725, 760, 770, 800, RUS, other referenced standards, and the appropriate local codes. All copper cabling shall bear U.L. Listings and appropriate markings for the environment in which they are to be installed. All fiber optic cabling shall bear U.L. Listing and appropriate markings for the environment in which they are to be installed.

#### 1.6.2 Cable Pathway

Coordinate with DOIM (Directorate of Information Management) personnel for conduit/duct assignment prior to placing cables in duct bank. Provide future use pull ropes in conduits with copper cables and secure to duct plugs at both ends. Confirm conduit assignments on drawings. Random use of conduits by the contractor and not agreed to directly by Cliff Hawkswood

of DOIM are subject to re-work of all affected cabling at no expense to the project. This requirement MUST be coordinated prior to any cable installation.

#### 1.7 FIELD ORDERS, CHANGE ORDERS AND CHANGE ORDER REQUESTS

The following provides a detailed process to follow if a change to the scope or to the Contract is required:

A Field Order (FO) will be issued by the Project Coordinator to the contractor. The Field Order will describe the required change.

If change does not impact the price or affect the completion date of the project the contractor shall accept the Field Order and complete the work as requested. If the field order will affect the price or time of completion the contractor must submit a Change Order Request, indicating with supporting documentation the reason a change order is required and if any, the price adjustment associated with the change. The contractor shall not complete the work until written approval is received by the contractor from the Project Coordinator in the form of a signed Change Order that has been processed through the appropriate channels.

If the Project Coordinator accepts the Change Order Request, the Project Coordinator will then issue a Change Order authorizing the change in price or time.

A written Change Order must be signed by both the Project Coordinator (DOIM or other) and an authorized Owner Representative (COE - Corp of Engineers) prior to the contractor proceeding with the implementation of the investigated changes.

This Change order must also comply with the official processes described in the contract documentation from the Architect.

#### 1.8 PROJECT CONDITIONS

To ensure a constructible communications cabling system, the contractor shall examine all drawings and specifications to familiarize themselves with the type of construction materials to be used, and the nature and extent of work provided in other sections of the construction documents. Any clarifications needed shall be requested through the appropriate channels no later than ten (10) working days before bid opening; upon contract award, contractor shall assume full responsibility for any cost incurred due to changes as required to complete the work as defined in this section if questions were not asked by the indicated time.

Verify dimensions, correct location of hardware, and layouts with Project Coordinator before proceeding with the installation of any hardware, cabling, and/or connections. Due to the critical nature of this communications installation it is advised that any uncertainty as to the correctness of a task to be performed by the contractor be verified with the appropriate Project Coordinator (Cliff Hawkswood - DOIM) prior to performing that task. Contractor will be liable for the correction of any improperly performed task that could have been clarified prior to proceeding.

#### 1.9 PERMITS, LICENSES, INSPECTIONS AND FEES

Contractor shall be responsible for obtaining any cost associated with required permits, licenses, inspections or fees.

#### 1.10 PROJECT PHOTOGRAPHS

Photographs shall be taken:

Prior to concealment of any interior or exterior conduit pathways to be encased in concrete prior to concrete pour. Exterior conduits shall be photographed again prior to backfill. Photos must be taken at such locations that the entire length of the pathway is captured in the photograph.

Prior to concealment of any other cables that will become inaccessible after concealment, such as all direct buried cables shall also be photographed.

Of all interior manhole wall elevations that are intended for classified cabling as to document the pathway as complete and secure for that particular use.

Of the entire manhole after all cables are placed and racked as complete.

Of any other installation situation as required by the Project Coordinator.

#### 1.11 PERIODIC FIELD OBSERVATION REPORTS

The Project Coordinator will conduct site visits as required to monitor the progress and quality of the workmanship and the work environment as well as the surrounding facility. Any item found by the Project Coordinator to be deficient will be documented in a periodic Field Observation Report. The contractor shall take appropriate actions to immediately rectify any items deemed unacceptable by the Project Coordinator. The contractor shall not wait for a hard copy of the periodic Field Observation Report if the action required to rectify the situation is obvious and clear.

#### 1.12 CLEANUP

The Contractor shall keep the site and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract before leaving for the day. The Project Coordinator has the right to call the Contractor back to perform the cleanup. If the Contractor fails to perform the cleanup another contractor will be engaged at the Contractors expense to perform the cleanup. Any fees resulting from the cleanup of Contractors work area will be withheld from the final settlement.

Upon completion of the Work and before acceptance and final payment will be made, the Contractor shall clean and remove from the site, all surplus and discarded materials, temporary structures and debris of every kind. He shall leave the site in a neat and orderly condition at least equal to that which originally existed. Surplus and waste materials removed from the site shall be disposed of in accordance with applicable laws and regulations and at no expense to the project.

It is the Contractor's responsibility to keep clean all equipment and fixtures provided under this contract for the duration of the project. The facilities require an environment of extreme cleanliness, and it is the

Contractor's responsibility to adhere to the strict regulations regarding procedures on the premises. After all tests are made and installations completed satisfactorily:

- 1) Thoroughly clean entire installation, both exposed surfaces and interiors.
- 2) Remove all debris caused by work.
- 3) Remove tools, surplus, materials, and cable reels/spools when work is finally accepted.
- 4) All vaults shall be swept and completely cleaned of all debris gathered during installation, including any existing vaults, which are entered or worked in for the purpose of completing this project. Final acceptance will not be granted until such conditions are met.

#### 1.13 PROJECT CLOSEOUT

A portion of the Contract amount will be retained until the Owner determines by inspection that all provisions of the project documents have been fulfilled and certifies that all other provisions of the Agreement have been fulfilled.

Prior to release of this retainage, the Contractor shall have provided all required documentation, performed all required tests and have completed the work to the satisfaction of the Project Coordinator. In addition, any certifications required by local or governmental authorities having jurisdiction that should have been transferred to the Owner shall be received.

#### 1.14 ACCEPTANCE

After the successful installation inspections and functional testing by the Project Coordinator and Contractor, the Project Coordinator will determine if there are any open issues or discrepancies and notify the Contractor. Upon completion or determined failure, the Project Coordinator will issue written notification to the Contractor as to the status of the installation acceptance.

#### 1.15 QUALITY ASSURANCE

The Project Coordinator will perform inspections in evaluation and functional testing of the subsystems as completed and the total systems. The Contractor will be responsible for assisting with these functionality and performance tests. The Demonstration setup will be the benchmark for comparison of the results. Failure of the subsystems and/or systems to perform as specified will be considered as a failure to perform under the Terms and Conditions.

The Contractor shall lead in an overall Quality Assurance Program.

All materials used shall bear the Underwriters' Laboratory, Inc. label, provided a standard has been established for the materials in question.

All products, components, devices, equipment, and materials shall be new and unused, clean, free of defects, and free of damage and corrosion.

Manufacturers of equipment shall be firms regularly and currently engaged in the production of equipment and accessories provided.

Apply and install materials, equipment, and specialties in accordance with manufacturers written instructions. Conflicts between the manufacturer's instructions and the contract documents shall be referred to in writing to the Project Coordinator for resolution.

## PART 2 PRODUCTS

### 2.1 STANDARD PRODUCTS

Materials and equipment shall be the standard products of a manufacturer regularly engaged in the manufacturing of such products and shall be the manufacturer's latest standard design that has been in satisfactory use for at least 5 years prior to bid opening. Each major component of equipment shall have the manufacturer's name and type identified on the equipment. All products supplied shall be specifically designed and manufactured for use with outside plant communications systems or designated area of intended use. All items of the same class of equipment shall be the products of a single manufacturer when feasible.

### 2.2 CABLE

Copper conductor and Fiber Optic cable shall conform to the following:

#### 2.2.1 Copper Underground Cable

Cables shall be manufactured per current RUS REA Bull 1753F-205 or RUS REA Bull 1753F-208. PE-89 Type.

All voice grade wire and cable placed in the outside environment shall be solid, twisted pair, and multi-conductor. The copper twisted pairs shall have a mutual capacitance at 1 KHz of 15.7 nF/1,000 ft. The cable shall be resistant to mechanical damage, lightning or damage from wildlife.

The buried or underground cable shall have an aluminum steel polyethylene (ASP) sheath and a core of solid-copper conductors, dual insulated with foam skin and plastic, surrounded by filling compound.

The multi-pair copper cables shall meet be 24 AWG and be available in at least 2400 pair.

#### 2.2.2 Fiber Optic Cable

Provide fiber optic cable specifically designed for outside use with tight or loose buffer construction. The tight buffer optical fiber cable shall consist of a central glass optical fiber surrounded by a soft intermediate buffer to allow for thermal expansions and proper fitting of the secondary buffer. The loose buffer optical fiber cable shall have the glass optical fiber within a filled loose tube. All fiber optic cables used shall conform to the requirements of RUS REA Bull 1753F-601 (PE-90) including any special requirements made necessary by a specialized design.

Media shall have all glass, dual window, graded index material. Fiber shall be coated with a cladding material which is concentric with the core. Fiber cladding diameter shall be nominal 125 microns. Media shall have

transmission window centered at 1300 and 1550 nanometer wavelengths.  
Attenuation at 1550 nanometers shall be less than 0.5 dB/ kilometer.

#### 2.2.2.1 Cable Cores

A central, nonmetallic core member shall be included to serve as a cable core foundation to reduce strain on the fibers, but not to serve as a pulling strength member.

#### 2.2.2.2 Optical Fiber

Single-mode optical fibers shall be Class IV.

#### 2.2.2.3 Performance Requirements

The fiber optic cable shall comply with the specified mechanical performance requirements while used in buried and underground duct applications where the temperature varies from minus 20 to plus 60 degrees C. (minus 5 to plus 140 degrees F.) Optical performance degradation shall be less than 5 percent of the optical performance requirements in the temperature range of minus 20 to plus 60 degrees C. (minus 5 to plus 140 degrees F.) The fiber optic cable shall not be damaged in storage where the temperature may vary from minus 40 to plus 65 degrees C. (minus 40 to plus 148 degrees F.)

### 2.3 CLOSURES

#### 2.3.1 Underground Splice Closure

Underground closures shall conform to RUS 345-72. The closure shall be of thermoplastic, thermo-set or stainless steel material and be suitable for use in a vault or manhole.

Provide airtight, watertight closures sized with endplates large enough to allow multiple cable entries at each end.

Closures shall be re-enterable and able to be filled with encapsulant.

Closures shall be designed for buried and/or underground installation.

Provide all accessories required making the closure airtight, watertight, and re-enterable.

Provide all accessories required to bond and ground the closure and the metallic cable sheath.

Approved manufacturers:  
Preformed Line Products  
3M/AMP UCN

### 2.4 CABLE SPLICES AND ORGANIZERS

#### 2.4.1 Copper Cable Splices

All cables greater than 25 pairs shall be spliced using modular splicing connectors, which accommodate 25 pairs of conductors at a time. The correct connector size shall be used to accommodate the wire gauge of the cable to be spliced. The connectors used shall be listed in RUS IP 344-2.

## 2.5 MANHOLE AND DUCT

All manhole/vault and duct products shall conform to RUS Bull 1751F-643.

### 2.5.1 New Manholes/Vaults

New manholes/vaults shall be equipped with pulling-in irons, cable racking, risers, hole covers, steps, hook ladders and ground rod, and conform to the requirements of RUS REA Bull 345-151, project drawings and Fort Lewis (DOIM) requirements. Manholes/vaults shall be Utility Vault 38Y-612-TCA. They shall be designed so that the main trunk conduits enter and exit near the center of the ends, and lateral conduits exit on the sides near the corners.

### 2.5.2 Duct/Conduit

Conduit shall be furnished as specified in Sections 16415 ELECTRICAL WORK, INTERIOR and 16375 ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND and as shown on project drawings.

### 2.5.3 Inner duct

Inner duct shall be SIDR 11.5 polyethylene plastic pipe conforming to ASTM D 2239. Inner duct shall be orange in color.

## 2.6 EQUIPMENT RACKS

Distribution frames, cabinets, and back-boards shall be provided as shown and designed to mount connector blocks, protector blocks, cross connects, and other hardware required for the termination and protection of the outside plant cables; to provide a demarcation point between inside and outside plant cable; and to allow inside and outside plant cable to be cross connected and/or extended. Equipment used shall match that of the existing equipment in the specified locations.

### 2.6.1 Floor Mounted Open Frame

Floor mounted equipment rack(s) shall be required and shall match existing racks as/when needed. Racks shall be provided with a standard top cross-member, and predrilled base plate to allow floor fastening. Needs anticipated in Range Control Hut, MSTF Hut, and possibly Bldg. 2003 as a part of this contract.

Marconi double-sided telco style racks exist in these locations. This is the same style of rack to be provided for the termination of all copper cables to protector blocks in the identified locations. Coordinate with DOIM for exact rack requirements. Submit accordingly.

### 2.6.2 Cable Guides

Cable guides shall be specifically manufactured for the purpose of routing cables, wires and patch cords horizontally and vertically on [480] [580] mm ([19] [23] inch) equipment racks. Cable guides shall consist of ring or bracket-like devices mounted on rack panels for horizontal use or individually mounted for vertical use. Cable guides shall mount to racks by screws and/or nuts and lock-washers.

## 2.7 CONNECTOR BLOCKS

Connector blocks consisting of flame-retardant molded plastic fastened to a metal mounting bar shall be provided to terminate the outside plant cable as shown. The connector blocks shall be of 100-pair block size and equipped with protection modules. The connector blocks shall be 24 gauge stub type. The cable stubs shall be 100 pair stubs of the required length necessary for installation and conform to RUS REA Bull 1753F-207. Marconi 399, wire wrap-type 100 pair blocks are existing and to be matched when/where required.

## 2.8 PROTECTOR MODULES

The protector modules shall be of the two-element gas tube type. Protection modules shall be [heavy duty, A>10 kA, B>400, C>65A] [maximum duty, A>20 kA, B>1000, C>200A] where A is the maximum single impulse discharge current, B is the impulse life and C is the AC discharge current per ANSI C62.61. The gas modules shall shunt high voltage to ground, fail short, be equipped with an external spark gap and heat coils, and shall comply with UL 497. Coordinate module requirements with DOIM.

## 2.9 FIBER-OPTIC TERMINATIONS

### 2.9.1 Fiber Optic Connectors

All outside plant fiber strands shall be terminated to a high quality ST type fiber optic connector, with ceramic ferrule material and a maximum insertion loss of 0.5 dB. Connectors shall meet performance standards of ANSI/TIA/EIA-568-B. If pre-connectorized cable assemblies or pigtails are used, the connectors shall be terminated on a 3 m (10 foot) length of single-fiber cable. The single-fiber cable shall contain a buffered optical fiber of the same type and specification as that used in the multi-fiber cable.

### 2.9.2 Fiber Optic Patch Panels

Patch panels shall be a complete system of components by a single manufacturer, and shall provide termination, splice storage, routing, radius limiting, cable fastening, storage, and cross-connection. Patch panels shall be [480 mm 19 inch) rack mounted] panels. Patch panels shall provide strain relief for cables. Panels shall be labeled as coordinated with DOIM.

## 2.10 MISCELLANEOUS ITEMS

### 2.10.1 Shield Connectors

Shield connectors shall make a stable, low-impedance electrical connection between the shield of the communications cable and a conductor such as a strap, bar, or wire. The connector shall be made of tin-plated tempered brass. Shield bond connectors shall comply with RUS 345-65.

### 2.10.2 Grounding Braid

Grounding braid shall provide low electrical impedance connections for dependable shield bonding. The braid shall be made from flat tin-plated copper.

### 2.10.3 Warning Tape

Marking and locating tape shall be acid and alkali resistant polyethylene film, 150 mm (6 inches) wide with a minimum strength of 12.1 MPa (1750 psi) lengthwise and 10.3 MPa (1500 psi) crosswise. The tape shall be manufactured with integral wires, foil backing, or other means to enable detection by a metal detector when the tape is buried up to 1 m (3 feet) deep. The metallic core shall be encased in a protective jacket or provided with other means to protect it from corrosion and shall be specifically manufactured for marking and locating underground utilities. The warning tape shall be orange in color and continuously imprinted with the words "WARNING - COMMUNICATIONS CABLE BELOW" at not more than 1.2 m (48 inch) intervals.

### 2.10.4 Cable Warning Signs

Cable warning signs, which identify the route of buried cable, shall be stake mounted. The stake shall be driven into undisturbed soil and the sign shall be mounted to the stake in accordance with the manufacturer's instructions. Warning signs shall be placed at intervals of no more than 152.5 m (500 feet) and at each change of direction in the cable route. Warning signs shall also be placed on each side of every crossing of surface obstacles such as roads, railroads, stream crossings, or any similar crossing where excavation is likely to occur.

## 2.11 UNSPECIFIED EQUIPMENT AND MATERIAL

Any item of equipment or material not specifically addressed on the drawings or in this document and required to provide a complete and functional underground cabling system installation shall be provided in a level of quality consistent with other specified items. These items shall also be included in the contractor submittal for proper approval prior to installation.

## PART 3 EXECUTION

### 3.1 EXAMINATION

Examine the site, duct banks, manholes, and building entrances to determine if site is ready to receive materials and installation. The Contractor shall verify the absence of defects or errors that would cause defective installation/application of products, or cause latent defects in workmanship and function.

It is the Contractor's sole responsibility to measure cable routes and distances prior to ordering cable and material. The Contractor shall provide actual installed cable lengths on as-built drawings.

Investigate areas where work will interfere with pedestrian traffic and coordinate work with Public Works personnel prior to commencement of work.

### 3.2 PREPARATION

Verify that conduits in duct banks have had cleaning and test mandrils pulled through the conduits and that the conduits have proved acceptable for use.

Provide barricade protection and warning for pedestrians surrounding work areas especially when manhole lids are open.

### 3.3 GENERAL INSTALLATION

Installation shall conform to ANSI/TIA/EIA Standards, Building Industry Consultant Service International (BICSI) Methods, NFPA 70 NEC 1999, and the manufacturer's installation guidelines and requirements. The Contractor shall ensure that the maximum pulling tensions of the specified distribution cables are not exceeded and cable bends maintain the proper radius during the placement of the facilities. Failure to follow the appropriate guidelines will require the Contractor to provide in a timely fashion the additional material and labor necessary to properly rectify the situation. This shall also apply to any and all damages sustained to the cables by the Contractor during the installation.

Provide cable lubricant manufactured for and recommended by the cable manufacturer for use with the cable being installed. Remove cable lubricant residue from exposed surfaces at the end of cable installation.

Route copper cables in manholes against walls utilizing cable racking and support arms. Attach cables to support arms with plastic cable ties.

Support splice closures on cable racking support arms at each end of the closure. Secure with plastic cable ties.

Provide one complete loop of fiber optic cable around the inside of each manhole for each fiber optic cable. Support the cable on cable racking support arms and secure with plastic cable ties.

Bond and ground metallic copper cable sheaths, closures, and lightning protector units. All grounds shall consist of #6 AWG copper wire or equivalent copper braid and shall be supplied from an approved building ground and bonded to the main electrical ground which shall be verified by the Contractor. Grounding shall be in accordance with the latest NEC version.

Provide all accessories and hardware necessary to facilitate the complete installation and operation of the underground cabling system.

Furnish special installation equipment, tools, and test equipment necessary to provide a complete and operational underground cabling system.

Provide printed labels for all cables, closures, and terminating hardware in accordance with contract documents, ANSI/TIA/EIA Standards, and DOIM/contractor coordinated schemes.

Install duct plugs constructed of all plastic or plastic and stainless steel in conduits in which cables are installed. Provide duct plugs equipped with rope ties on the back plate to secure pull rope. Size the duct plugs to the cable that is being installed in the conduit. A duct plug shall seal around inner ducts in each 4-inch conduit and empty inner ducts shall have a blank duct plug installed. Provide a duct plug in each inner duct with a fiber optic cable installed. Remove blank duct plugs from empty conduits into which cable is to be installed and return blank duct plugs to DOIM personnel.

### 3.4 PROJECT MANAGEMENT

Provide a single point of contact, i.e. Project Manager, on site during all phases of the work.

The Project Manager shall coordinate all work with any General Contractor, DOIM, and the Architect/Engineer team as required.

1. Provide day-to-day direction and on-site supervision of Contractor personnel.
2. Ensure conformance with all Contract Documents.
3. Attend regularly scheduled construction meetings.

### 3.5 INSTALLATION

All system components and appurtenances shall be installed in accordance with the manufacturer's instructions and as shown. All installation work shall be done in accordance with the safety requirements set forth in the general requirements of IEEE C2 and NFPA 70.

#### 3.5.1 Cable Inspection and Repair

All cable and wire used in the construction of the project shall be handled with care. Each reel shall be inspected for cuts, nicks or other damage. All damage shall be repaired. The reel wrap shall remain intact on the reel until the cable or wire is ready to be placed.

#### 3.5.2 Telephone Cable Bends

Telephone cable bends shall comply with the requirements and specifications of the cable diameter and type to be used. The duct bank bends shall also be built with cable bend requirements in mind.

#### 3.5.3 Penetrations

Penetrations in walls, ceilings or other parts of the building, made to provide for cable access, shall be caulked and sealed. Where conduits and ducts pass through fire walls, fire partitions, above grade floors, and fire rated chase walls, the penetration shall be sealed with fire stopping materials as specified in Section 07840 FIRESTOPPING. Fire stopped penetrations shall not compromise the fire rating of the walls or floors. All underground building entries shall be through waterproof facilities.

#### 3.5.4 Cable Protection

Unless otherwise shown or specified, direct buried cable shall be protected in accordance with Table 300.5 of NFPA 70. Where additional protection is required, cable may be placed in galvanized iron pipe (GIP) sized on a maximum fill of 40% of cross-sectional area, or in concrete encased 100 mm (4 inch) PVC pipe. Conduits shall extend at least 150 mm per 305 mm (6 inches per 12 inches) burial depth beyond the edge of the surface where cable protection is required; all conduits shall be sealed on each end. Conduit may be installed by jacking or trenching. Trenches shall be backfilled with earth and mechanically tamped at 150 mm (6 inch) lifts so that the earth is restored to the same density, grade and vegetation as adjacent undisturbed material. Applicable requirements for road and

railroad crossings shall be adhered to for the protection of the duct bank and cabling as necessary.

#### 3.5.5 Underground Cable

Underground cable installation shall be accomplished in accordance with the requirements set forth in RUS REA Bull 1751F-641.

#### 3.5.6 Cable Pulling

For cable installed in ducts and conduit, a cable feeder guide shall be used, between the cable reel and the face of the duct and conduit, to protect the cable and guide it into the duct and conduit as it is paid off the reel. As the cable is paid off the reel, it shall be inspected for jacket defects. Precautions shall be taken during installation to prevent the cable from being kinked or crushed. A pulling eye shall be attached to the cable and used to pull the cable through the duct and conduit system. Cable shall be hand fed and guided through each manhole. As the cable is paid off the reel into the cable feeder guide, it shall be sufficiently lubricated with a type of lubricant recommended by the cable manufacturer. Where the cable is pulled through a manhole, additional lubricant shall be applied at all intermediate manholes. Dynamometers or load-tension instruments shall be used to ensure that the pulling line tension does not exceed the installation tension value specified by the cable manufacturer. The mechanical stress placed upon a cable during installation shall not cause the cable to be twisted or stretched.

#### 3.5.7 Cable/Cable Route Bends

Only large radius sweeps shall be used in conduit runs and shall not exceed a cumulative 90 degrees between manholes/vaults.

#### 3.5.8 Manhole and Ducts

Manhole and duct systems shall be installed in accordance with Section 16375 ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND. Manholes shall be placed in line with the main duct. Splice cases shall be mounted in the center on the long sides. Lateral conduits shall exit the long sides near the corners.

#### 3.5.9 Inner duct Installation

Inner duct shall be pulled through existing duct-manhole/vault system in continuous sections. Splices, joints, couplings, or connections of any type will not be allowed between manholes vault. Inner duct shall be plugged at both ends with polyurethane foam duct seal; this material shall also be inserted between the inner duct and the duct if cables are placed in the inner ducts. Only one cable shall be installed in a given inner duct. Existing and new unoccupied inner ducts shall be trimmed leaving 50 mm (2 inches) exposed.

#### 3.5.10 Pull Cord

Pull cords of 10 mm (3/8 inch) polypropylene shall be installed in all unused ducts and inner-ducts with a minimum of 610 mm (2 feet) spare cord protruding from each end.

### 3.5.11 Surge Protection

Except for fiber optic cable, all cables and conductors, which serve as communication lines, shall have surge protection meeting the requirements of RUS 345-50 installed at the entry facility.

## 3.6 SPLICING

### 3.6.1 Copper Conductor Splices

Copper conductor cable splicing shall be accomplished in accordance with RUS Bull 1753F-401 (PC-2). Modular splicing shall be used on all cables larger than 25 pairs. Splices to take place as indicated on drawings or where deemed necessary by the contractor and approved by DOIM in writing.

## 3.7 GROUNDING

Except where specifically indicated otherwise, all exposed non-current carrying metallic parts of telephone equipment, cable sheaths, cable splices, and terminals shall be grounded. Grounding shall be in accordance with requirements of NFPA 70, Articles 800-33 and 800-40.

### 3.7.1 Ground Bars

#### 3.7.1.1 Telecommunications Master Ground Bar (TMGB)

A copper TMGB shall be provided, in accordance with ANSI/TIA/EIA-607, to be the hub of the basic grounding system by providing a common point of connection for ground from outside cable, MDF, and equipment. The TMGB shall have a ground resistance, including ground, of 10 ohms or less.

#### 3.7.1.2 Telecommunications Ground Bar (TGB)

Copper TGB shall be provided in accordance with ANSI/TIA/EIA-607 in each communications closet and room and each frame. The TGB shall be connected to the TMGB in accordance with ANSI/TIA/EIA-607. Each TGB shall be connected to the TMGB by the most direct route utilizing a copper wire conductor with a total resistance of less than 0.01 ohms.

## 3.8 Incoming Outside Plant Cables

All incoming outside plant cable shields shall be bonded directly to the TMGB or the closest TGB.

### 3.8.1 Cable Stubs

All shields of cable stubs shall be bonded to a TGB located on the frame.

### 3.8.2 Shields

The shields of all incoming cables shall not be bonded across the splice to the cable stubs.

### 3.8.3 Protection Assemblies

The protector assemblies shall be mounted directly on the vertical frame ironwork. The assemblies mounted on each vertical frame shall be connected

with a No. 6 AWG copper conductor to provide a low resistance path to the TGB.

#### 3.8.4 Manholes/Vaults

The shields of all cables in each manhole shall be bonded together by a bonding wire or ribbon. At intermediate manholes, where the cable is pulled through without a sheath opening, bonds are not required. If the manhole has a lacerating bonding ribbon, the shields of spliced cables shall be attached to it.

#### 3.9 CUTOVER AND RECORDS

All necessary transfers and cutovers, shall be accomplished by the Contractor.

#### 3.10 ACCEPTANCE TESTS

The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all required testing. Notification of any planned testing shall be given to the Contracting Officer at least 14 days prior to any test; testing shall not proceed until after the Contractor has received written Contracting Officer's approval of the test plans as specified. The test plans shall define all the tests required to ensure that the system meets technical, operational, and performance specifications. The test plans shall define milestones for the tests, equipment, personnel, facilities, and supplies required. The test plans shall identify the capabilities and functions to be tested.

##### 3.10.1 Copper Conductor Cable

The following acceptance tests shall be performed in accordance with RUS REA Bull 1753F-201:

- a. Shield continuity.
- b. Conductor continuity.
- c. Conductor insulation resistance.
- d. Structural return loss.
- e. Cable insertion loss and loss margin at carrier frequencies.
- f. Shield ground for single jacketed cables.
- g. DC loop resistance.

##### 3.10.2 Fiber Optic Cable

Two optical tests shall be performed on all optical fibers: Optical Time Domain Reflectometry (OTDR) Test, and Attenuation Test. In addition, a Bandwidth Test shall be performed on all multi-mode optical fibers. These tests shall be performed on the completed end-to-end spans which include the near-end pre-connectorized single fiber cable assembly, outside plant as specified, and the far-end pre-connectorized single fiber cable assembly.

#### 3.10.2.1 OTDR Test

The OTDR test shall be used to determine the adequacy of the cable installations by showing any irregularities, such as discontinuities, micro-bending, improper splices, for the cable span under test. Hard copy fiber signature records shall be obtained from the OTDR for each fiber in each span and shall be included in the test results. The OTDR test shall be measured in both directions. A reference length of fiber, 1 km (3280 feet) minimum, used as the delay line shall be placed before the new end connector and after the far end patch panel connectors for inspection of connector signature. The OTDR test shall be conducted in accordance with ANSI/EIA-455-81A-91 for single-mode fiber and ANSI/EIA/TIA-455-78A-98 for multi-mode fiber. Splice losses shall not exceed 0.1db. Attenuation losses shall not exceed 0.5 db/km at 1310 nm and 1550 nm for single-mode fiber.

#### 3.10.2.2 Attenuation Test

End-to-end attenuation measurements shall be made on all fibers, in both directions, using a 1300 and 1550 nanometer light source at one end and the optical power meter on the other end to verify that the cable system attenuation requirements are met. The measurement method shall be in accordance with ANSI/EIA/TIA-455-53A.

#### 3.10.2.3 Bandwidth Test

The end-to-end bandwidth of all fiber span links shall be measured by the frequency domain method. The bandwidth shall be measured in both directions on all fibers. The bandwidth measurements shall be in accordance with EIA ANSI/EIA/TIA-455-30B.

### 3.11 TESTING AND INSPECTION

#### 3.11.1 Copper Cable

Inspect cable and reels for damage prior to acceptance from manufacturer or supplier. Do not install damaged cable. Return it to the supplier or manufacturer for replacement.

Test all copper cables end-to-end for the following:

- Continuity
- Shorts between two or more conductors
- Crossed pairs
- Reversed pairs
- Split pairs
- Transposed pairs or binder groups
- Grounded conductors
- Any other miss-wiring

Record test results and identify defects.  
Correct defects and retest and record the results. Defects shall be corrected to the satisfaction of the DOIM personnel.

Record test results and provide the results in a 3-ring binder format to DOIM personnel.

### 3.11.2 Fiber Optic Cable

Inspect cable and reels for damage prior to acceptance from manufacturer or supplier. Do not install damaged cable. Return it to the supplier or manufacturer for replacement.

Acquire manufacturers factory on reel test results and provide to DOIM personnel.

OTDR test each fiber strand on the reel upon receipt from the supplier. Record the test results and compare them with the manufacturers on reel test results. Return the fiber to the supplier for replacement if there are any test discrepancies.

The installation of any fiber deemed acceptable for installation by the manufacturer reel test data is not considered sufficient enough to proceed with the installation of that cable. Post shipping to the project site/pre-installation testing is required by the contractor for the verification of quality prior to installation. The project will not be responsible for the installation of fibers whose quality status should have been identified as stated above. Contractor shall provide these pre-install test results as well as those from the reel to DOIM prior to install.

OTDR test each fiber strand after the cable is installed and prior to splicing and/or terminating. Compare the test results with those taken prior to installation for discrepancies that indicate damage during installation. Record the test results and provide to DOIM personnel. Replace fiber optic cable damaged during installation.

OTDR test each fiber strand after the cable is spliced and terminated and record the results. Each fiber strand test result shall meet or exceed the expected link loss calculated by summing the allowable cable loss per kilometer times the length of cable installed, any splice loss, and connector loss. Repair to the satisfaction of DOIM personnel any fiber strands that do not meet or exceed the expected loss. Provide final test results in a 3-ring binder format to DOIM personnel.

Fiber testing shall be performed on all fibers in the completed end to end system. There shall be no splices except those specified. Testing shall consist of an OTDR trace performed per TIA/EIA 455-61.

The Contractor at no charge shall bring any fiber optic link not meeting the requirements of the standards or contract documents into compliance to DOIM. Documentation shall be provided in both hard copy and 3-1/2 inch diskette using Microsoft ® Excel spreadsheet software for each fiber strand tested.

### 3.12 WARRANTY

Provide any Extended Product Warranty and/or Applications Assurance Warranty available for this cabling system.

#### Required Warranty

Contractor shall state any additional Contractor supplied warranty. Minimum of one-year from time of acceptance by DOIM personnel is required.

### 3.13 COMPLETION OF WORK

At the completion of the underground cabling system the Contractor shall restore to its former condition all aspects of the project site. On a daily basis the Contractor shall remove all waste and excess materials, rubbish, debris, tools and equipment resulting from or used in the services provided under the contract documents. All clean up, restoration, and removal noted above will be by the Contractor and at no cost to the project. If the Contractor fails in its duties under this paragraph, DOIM may upon notice to the Contractor perform the necessary clean up and deduct the costs thereof from any amounts due or to become due to the Contractor. The Contractor shall provide a dumpster for their own use. It shall be the Contractor's responsibility to remove trash from the areas it is working in and bring trash and debris to the dumpster. The Contractor will not use the General Contractor's dumpsters or trash disposal without prior approval of the General Contractor.

END OF SECTION